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Macworld

CD EDITION

THE WORLD'S FAVOURITE MACINTOSH MAGAZINE

FEBRUARY 1995 £3.95

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MW
LAB

Upgrade

to Power Mac
performance



**Pixel
Perfection**
Cutting-edge
image editors
examined

ISSN 1356-9503



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You bought a Mac. And then a few more. You tied them together. People started sharing.



Now they're sharing their frustration. With you.

Time for a Workgroup Server.

That's the funny thing about the Apple™ Macintosh™ computer. With little fanfare and an idea known simply as 'plug and play', it turned a whole group of novice users into networked team players.

Is it any surprise? Just plug a connector into the back of a Macintosh and you're networked.

You can share files, printers—virtually any computing resource.

For some users this is the only kind of 'peer-to-peer' networking

they need. Others, however, find they need a Workgroup Server, dedicated to improving the productivity of their team or department.

So how do you know which is right for you? Just ask yourself some simple questions.

Do I have more than five networked computers? Has printing begun to slow down my Macintosh? Am I sharing more and more files with more and more people?

Is that essential information locked up on someone else's Macintosh?

Is there a danger of losing vital information? A 'yes' to any of these questions means it's time to consider an Apple Workgroup Server.

Apple Workgroup Servers provide the industry's easiest to manage centralised information store.*

Users can share files, ensuring they are available to just the right people at the right time. Without losing information or slowing systems down.

Apple Workgroup Servers also provide ways to share network applications and services, like accounting programs, databases, e-mail, calendars and more.

And that is just the beginning. With our integrated print spooling software users can free-up their Macintosh computers from printing jobs much faster, enabling real gains in productivity.

With Dantz Retrospect Remote® software† you can schedule automatic back-ups of both server and individuals' Macintosh desktop data across the network — automatically. Never has your information been so secure!

With FileWave®‡ software you can simplify the management of upgrading or installing new software. FileWave automatically checks the networked Macintosh systems, ensuring that key applications and documents are uniformly maintained at the correct version.

And using Apple Remote Access software from Apple, even mobile PowerBook™ users can be managed. Apple Remote Access allows users to exploit their network services from

anywhere in the world — across any time zone — as if they were on their local network.

Viper Instant Access™§ is a high performance application for fast access to reference information such as telephone numbers, price lists, product and people details, without the overhead of a general database application.

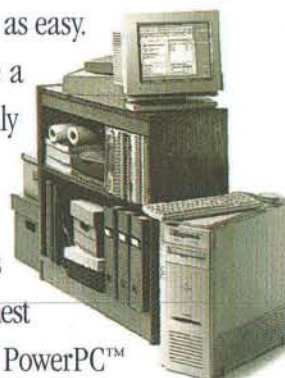
Central administration ensures both consistency and guaranteed availability — at any time.

So how easy is an Apple Workgroup Server to use? As easy as a Macintosh. And choosing the right Apple Workgroup Server for your needs is just as easy.

We have a complete family of products, including our newest models based on highest performance PowerPC™ technology. If this hasn't convinced you then browsing through our Apple Workgroup Solutions Guide will undoubtedly reveal the perfect solution from the breadth of software and hardware available.

To get your hands on our Solutions Guide — and for the name of your nearest Apple Authorised Reseller—call 0800 234800 today. And get the power you need most from your workgroup environment.

Apple 



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Macworld

February 1995



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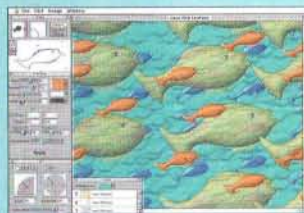


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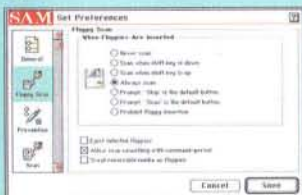


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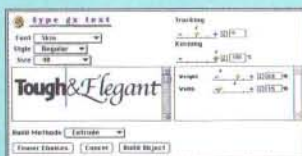
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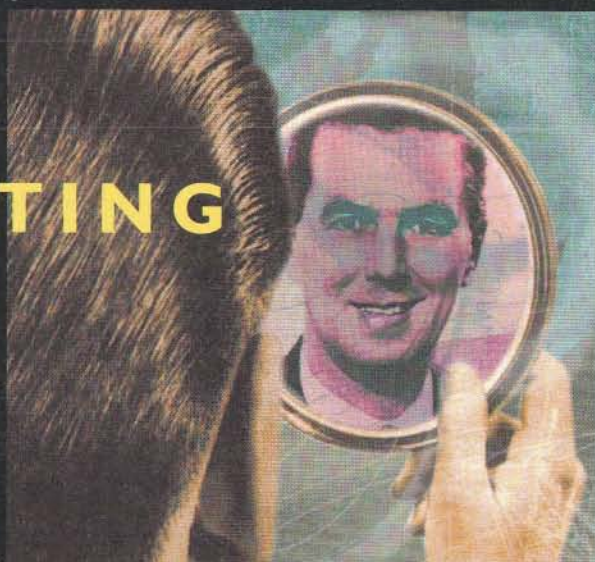


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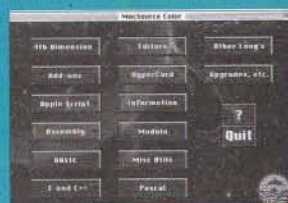
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reader offers



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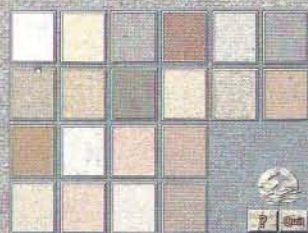
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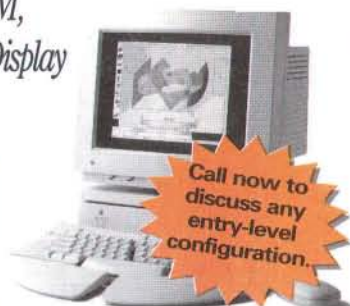


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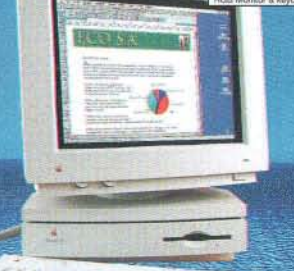
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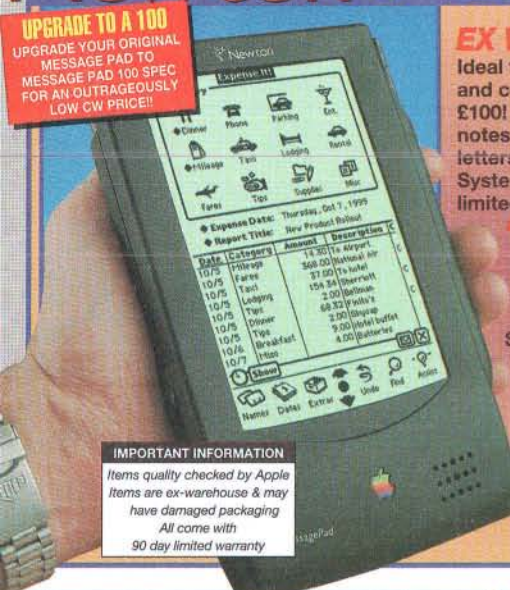


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NEWTON MESSAGE PAD 110

More than 3 times the memory space and twice the battery space of the original. Can connect with your Apple Macintosh™ computer or Windows-based PC (with optional Newton Connection Kit)

- 20MHz ARM 610 processor
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- Exchange data with Mac computer or PC
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MESSAGE PAD 100



MESSAGE PAD 100

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- May have damaged packaging
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Better value than a PowerBook 150. - 180 has ADB ports, can run external monitor and has a much better screen!

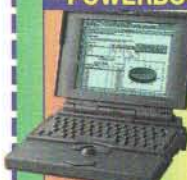
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French keyboard & documentation

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- 8Mb RAM exp to 136
- Ethernet
- 90 day warranty

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SELECT



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APPLE CD300 DOUBLE SPEED CD

Double speed SCSI CD-ROM for less than £130!

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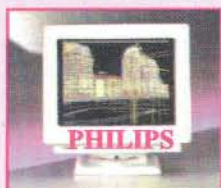
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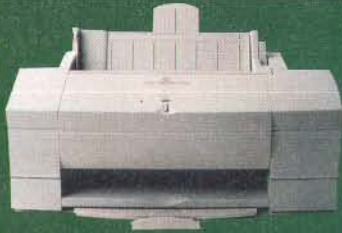
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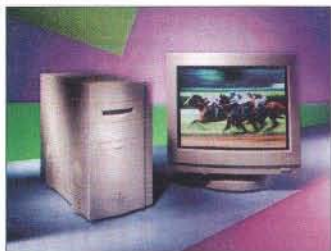
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Additions to Power Mac range

Apple unveiled three "new" Power Macs at Macworld Expo, although the changes were relatively minor compared with existing models. Essentially, all three new-comers feature faster processors and some other tweaks.

Like the original Power Macs, the newcomers are named for processor and speed. The 6100/66 includes a 66MHz PowerPC chip, up from the 60MHz processor in the original. The new 7100 jumps to 80MHz from 66MHz, while the new 8100 goes to 100MHz from the 80MHz original. The recently-introduced 8100/110 remains unchanged.

Perhaps as significant as the faster processors is the fact that Apple has added cache memory to both the new 6100 and 7100 models (the 8100 has always included a cache). Between them, the upgraded hardware add worthwhile performance increases.

Early indications are that the 6100 and 7100 will deliver as much as 40 percent better speed on processor and video-related tasks, compared with the original models. The 8100 performance gains are more modest because of the existing cache.

In the US, the price of the 6100 and 7100 will remain unchanged, although the former gets a bigger hard drive, up from 250MB to 350MB. The 8100/100 also includes a bigger hard drive – at 700MB – and actually undercuts the 8100/80, dropping from £3,186 to £2,775.



Bright future – wide range of third-party machines

Trio of Mac clones for 1995 launch

After weeks of speculation and rumour, the age of the Mac clone has arrived with the first three licensees for Apple's Mac OS and hardware going public. And contrary to expectations, none is a major PC manufacturer; instead Apple has chosen an existing partner, a California start-up and a Japanese toy maker.

Of the three, only Radius – the leading manufacturer of Mac display and desktop video systems – will be readily familiar. The others are Power Computing and Bandai Corp, best known as the manufacturer of the

"Mighty Morphin' Power Rangers" toys and figures.

The trio will use the Mac licences to produce very different sorts of Mac hardware.

Radius has indicated that it will produce Power Mac systems for high-end niche markets. Its first machine will almost certainly be a video workstation incorporating the company's just-released TeleCast hardware and Radius Edit software. Company officials indicated that a similar high-end system would later be offered to the colour publishing market.

Power Computing will produce a range of systems aimed at the mainstream of existing markets. These will be sold via mail order in the US and to OEMs only in Europe.

Bandai's offering will be the farthest from the existing line of Mac models. It is the first licensee for a new line of Apple hardware, codenamed Pippin: compact disc-based multimedia entertainment systems.

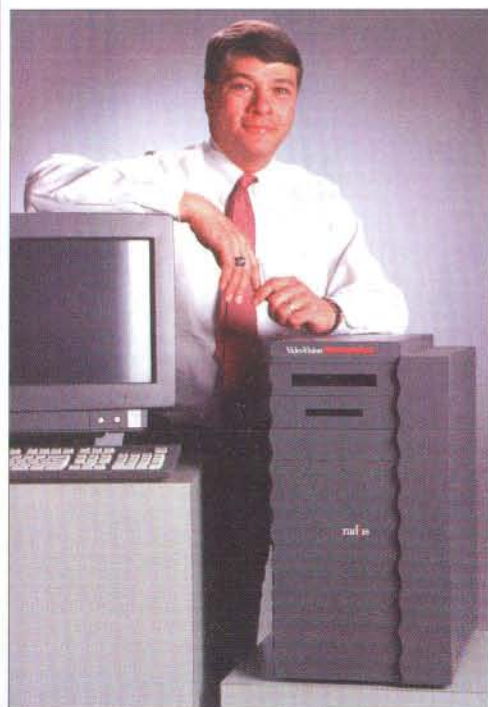
Although Radius was officially vague

about product specifications – the licensing deal was apparently a last-minute decision by Apple just before Christmas – company officials were more forthcoming in off-the-record discussions. Early indications are that its machines will use the PowerPC 601 (or perhaps the 604), and would probably be NuBus-based. In addition to integrating Radius's video hardware, the system may also include an accelerated display board, the Radius Array hard disk subsystem and a SCSI accelerator.

European vice-president Keith Harris said the first machines were unlikely to arrive before June or July and added that it was too soon to discuss the distribution and reseller arrangements.

However, at Radius's lead UK distributor Computers Unlimited, managing director James Sansom said CU is already selling similar systems based on Apple CPUs under the company's recent distribution agreement with Apple. Sansom said he was confident there was nothing in that distribution agreement that would prevent CU from selling Radius-built Mac-compatible systems.

While Radius is the best-known of the licensees, it's likely that the first to ship non-Apple Macs will be Power Computing. The company is a joint venture by PC veteran Stephen Kahng and Olivetti. Kahng is a former senior vice-president of Chips & Technologies, one of the earliest suppliers of chipsets for PC-compatibles, and the designer of the Leading Edge PC clone.



Chuck Berger, Radius's chairman, with the Power Mac-based VideoVision Workstation.

from high-end to budget multimedia

Kahng said Power Computing will have its first machines ready by March, and would initially offer three machines based on the Quadra 605, and the new 7100/80 and 8100/100 Power Macs. Additionally, the company's Mac-compatibles will include five free NuBus slots.

"We will maintain a very aggressive entry-level price point for our systems through innovative design, manufacturing and distribution strategies," Kahng said.

But he added that the company would not compete directly with Apple. "Apple will be competitive even if our prices will be lower since they have a lot of interesting technology in the lab — technology we won't be able to license," he said.

The company's agreement with Apple makes it not just a builder of Mac-compatible hardware, but also a vendor of Mac-compatible components and subsystems for OEMs that wish to build their own machines.

"We have several OEM agreements pending," Kahng said, but declined to mention companies by name.

Meanwhile, although not particularly Mac-like at first glance, the Pippin multimedia player licensed by Bandai may do more to grow the Mac-compatible market than the other agreements.

Pippin uses a PowerPC 603 processor and a slightly-modified version of the Mac OS, together with a quad-speed CD drive. Apple says that existing Mac CD products will work on the Pippin with minor modifications, while any software produced for the Pippin will work on a Mac without any changes whatsoever.

The Bandai machine is likely to be called the Power Player, and is expected to cost less than \$500 when it is introduced towards the end of the year. Because of the ease of converting existing Mac software, there should be more than 50 titles available at launch.

"Bandai's strength in the entertainment industry, paired with Apple's legacy in education and leadership in easy-to-use multimedia products will provide customers with an unparalleled home entertainment and education tool," said Satjiv Chahil, vice-president of Apple's New Media group.

Radius changes UK distribution

Radius has appointed Computers Unlimited as its exclusive distributor throughout the UK. The long-awaited decision, taking immediate effect, has ended speculation following Radius's merger with SuperMac. Contracts with two of SuperMac's current distributors, Frontline and Principal, will not be renewed when they expire at the end of February.

Radius also announced that its graphics card range is to be rationalised, resulting in the entire series of SuperMac cards being discontinued. This means an overall reduction in the number of cards from over 25 to seven. The new streamlined range will include new Thunder cards, in addition to the Radius Precision Colour cards.

Ingram Micro will continue to distribute the Super Mac monitors, while it negotiates its contract with Radius. Radius said that there are no current plans to rebadge the monitors.

Tim Collin, sales director of Radius UK said: "Computers Unlimited has been chosen to be our exclusive distributor because of its expertise in the high-end publishing and the digital video markets; and because they can service the entire Mac market. The fact that Apple chose Computers Unlimited as its third distributor last year proves that they are a multi-capable company that will be able to offer true integration of products. We need someone to sell systems and solutions." He added that this would be particularly important following the announcement that Radius is to clone the Mac operating system.

Rob Pickering, Computer Unlimited's business group manager for publishing products, said: "Despite many people's opinion, it was not a foregone conclusion. We had to work very hard for it, but our value added approach was obviously what Radius was looking for. Radius clones will be focused on the high end publishing and video markets, which we are particularly strong in."

With the entire range of SuperMac cards being discontinued, the Radius range will consist of just seven, including some new Thunder cards.



IMAGE '94 Award Winners

A fully-specified Agfa Arcus II scanner worth nearly £4,000 was the prize awaiting Daisy Cresswell, winner in the latest Macworld/Agfa graphics Excellence Awards.

The second place prize goes to Paul Ridout. His prize includes 100 fonts and a copy of the new Agfa Type Reference Book.

Sue Melling won third prize, which includes 50 fonts and a copy of the Agfa Type Reference Book.

The prizes were awarded at a celebratory lunch at Agfa's west London offices where two of the judges Paresh Patel, Agfa product manager, and Macworld editor Peter Worlock made the presentations. The other judges included Liz Harding, Agfa's marketing manager, Mandie Johnson, Macworld's art director, and Alan Stephenson from Graphotechniques.

We'd like to thank everyone for entering the competition. There was a huge response, and included slides, magazines, advertisements, posters, and album cover. All the judges agreed that the standard of the entries was extremely high.

First-prize winner Daisy Cresswell receives her Arcus scanner from Paresh Patel, Agfa Product Manager for scanners, and Macworld editor, Peter Worlock.



Four extra processors. For extra horsepower.



Popular mythology states that once you acquire a Power Mac™ you'll never have to wait for anything besides a number nine bus. Sadly, this is total fiction. Adobe Photoshop™ users still spend an unhealthy proportion of their lives watching wristwatches go round when they could be doing something useful instead.

So, to enhance the world's creative horsepower, Radius have developed PhotoEngine™ – a head blowing Photoshop accelerator that lets you put your foot down rather than your feet up.

Four 32 bit DSPs (Digital Signal Processors) – cunningly mounted on a single NuBus™ board – produce devastating performance compared with any production line Apple® CPUs including Power Macs.

Most tasks take about half as long, but the greatest benefits are seen if you work on large files (over 20Mb) and CYMK images where PhotoEngine can get things done in up to a twelfth of the normal time.



PhotoEngine power gives you time to be creative.

No matter what you do with Photoshop and regardless of which NuBus Mac you have, PhotoEngine will accelerate it – hugely. What's more, PhotoEngine comes with a 30 day money-back guarantee* – so you can bring it back if you don't like it – and a Worry-Free Warranty that ensures 24 hour replacement should it ever breakdown.

If you need any more convincing, simply call 01483 772 773, or write to Radius, 13 Westminster Court, Hipley St, Old Woking, Surrey, GU22 9LQ for some performance comparisons to help speed your conclusion.



INFOLINE NO. 116

*30 day money back guarantee only available at participating dealers, for a limited period only.
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Tel. 0181-200 8282. All trademarks or registered trademarks acknowledged.
Radius Inc. is a California company not related to or connected with Radius plc, which is a UK company.

IN BRIEF

Cascade Systems, launched 14 months ago, has opened its first City office and showroom in London's Docklands. The company achieved \$10 million sales in its first year, and has licensing agreements with a number of technology partners. It was appointed as Adobe System's first Adobe Acrobat systems integrator for Europe during 1994.

The company's principal products are the OPI server ImageFlow, production management and workflow system, DataFlow and the recently launched MediaSphere, an all digital archive and retrieval system. Cascade Systems 01277 356146.

Cabletron Systems, the world-wide hub manufacturer, reported record earnings and revenue for its third quarter. World-wide sales for the first nine months of 1994 increased by over 36 per cent.

Net sales of \$210 million represented a 34 per cent increase over sales of \$156.5 million in the previous year's quarter.

The **Software Publishers Association** announced that personal computer application software sales in Western Europe declined by 20 per cent to \$307 million for the third quarter of 1994. Five of the ten regions looked at, and all three of the largest regions, reported revenue declines in third quarter 1994. The UK/Ireland region had the highest sales in the quarter and suffered the smallest decline of the big three.

For the first time, Windows applications revenues in Western Europe declined year on year. Windows application sales for third quarter of 1994 were \$259 million, a 7 per cent decrease from third quarter of 1993. On the strength of 25 to 30 per cent growth in the first half of 1994, Windows applications sales for the first three quarters were up 17 per cent to \$1,054 million.

Third quarter 1994 DOS application sales were \$24.3 million (a decrease of 65 per cent), while Mac application sales were \$20.1 million (decrease of 28 per cent). For the first three quarters of 1994, DOS applications were \$111 million (decrease of 53 per cent), while Mac applications were \$78.3 million (decrease of 11 per cent).

"Average prices are down so sharply from 1993 that revenue growth for quarters 1, 2, and 3 were 10 per cent, 12 per cent and decreased by 20 per cent respectively. In this pricing environment, it has become very hard for application software companies to make money in Western Europe," said Gérard Gabella, SPA Europe MD.

FreeHand 5 offers killer new features

After months of uncertainty following the Adobe-Altdus merger, and the takeover of developer Altsys by Macro-media, FreeHand has bounced back with a major upgrade explicitly designed to match and surpass Adobe's Illustrator 5.5.

The new version, unveiled at Macworld Expo, features speed improvements, major enhancements in text-handling and a modern, extensible architecture that allows for a host of new graphics tools.

While Illustrator 5 introduced the concept of plug-in tools for object-oriented graphics, FreeHand 5 goes further. The Macromedia product can use any plug-ins developed for Illustrator while Macromedia says it is "aggressively evangelising" its own plug-in architecture.

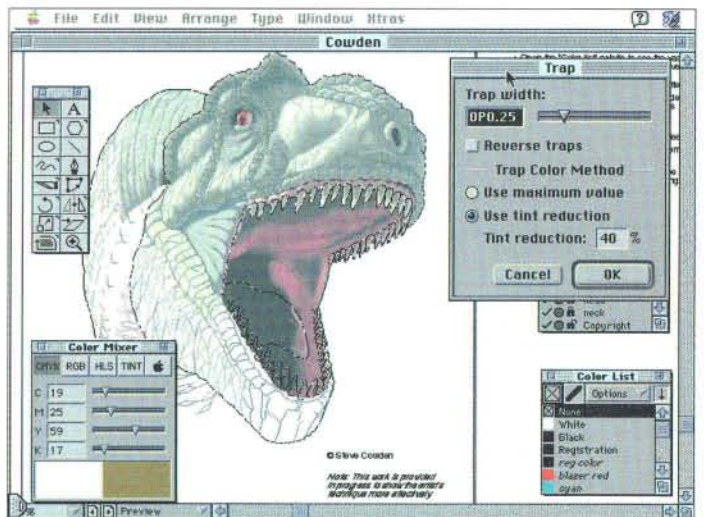
And while Illustrator plug-ins are limited to single-effect tools from a plug-in menu, FreeHand plug-ins can provide a greater range of effects including file-handling, drop-in palettes and special effects.

The program ships with a number of examples. These include the ability to manipulate objects (including outlined text) in 3-D, and to create custom traps.

In text-handling, too, developer Altsys has obviously set out to match and then better Illustrator. While the latter already had a

spelling checker and the ability to do find-&-replace on text, FreeHand 5.0 adds those features – and introduces text style sheets, a feature common in desktop publish-

and Power Mac versions at an unchanged price of £450. Macro-media is offering a £99 upgrade for existing FreeHand 4 users (free if purchased since January 1, 1995).



More bite

FreeHand 5 offers speed, major improvements to text handling and a flexible, plug-in tool system that includes a greater range of effects than its key competitor, Illustrator 5.5.

ing and word processing packages but new to illustration software.

Former Altsys founder Jim von Ehr, now heading Macromedia's digital design group, said programmers had spent considerable effort improving the performance of the software, and beta testers confirm that the upgrade is much quicker than version 4.0.

The package includes both 68K

There is also a competitive £149 upgrade for registered Illustrator, Canvas and MacDraw users.

The final surprise in the upgrade is availability. While Macromedia was expected to announce version 5.0 in San Francisco, the product wasn't expected to ship for some weeks. But Macromedia says that it's available immediately. Computers Unlimited, 0181 200 8282.

Lexmark's laser beams

If you're looking for more dpi for your pound, the Optra line of 1,200dpi laser printers from Lexmark International may fit the bill. The five printer models range in cost from £1,299 to £3,059 for base models – with optional 40MB hard disk, flash memory, RAM upgrades, extra paper trays and drawers, and special paper handling available at extra cost.

The printers run 1,200 x 1,200dpi jobs at 8ppm. Lower-resolution jobs print faster: the Optra R (£1,299) and Optra L (£1,849) print 300dpi and 600dpi at 12ppm; the Optra Rx (£1,999), Optra Lx (£2,569) and Optra Lxi (£3,059) run those jobs at 16ppm. The models

also differ in duty cycle, paper supply, paper-handling potential and amount of RAM. All five models have Lexmark's PostScript Level 2 emulation and Enhanced PCL 5. The Optra models all have two network-adaptor slots and the Optra Lxi has ethernet built in. Adapter cards are available for ethernet, Token Ring and LocalTalk. – Nancy E. Dunn

Lexmark's £1,299 Optra R prints 8ppm at 1,200 dpi or 12ppm at 300dpi or 600dpi.



Mac gains Atari emulator

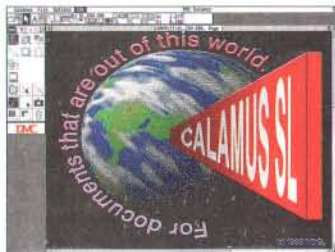
The big surprise at the November ProTOS, the professional Atari exhibition in Germany, was the showing of MagiCMac, an Atari ST emulator for 680x0-based Macs. A joint effort between Apple Germany, Application Systems Heidelberg (ASH) and 2B, MagiCMac is being presented as the logical upgrade for Atari computer owners who desire a more powerful machine yet wish to continue using existing applications.

The program is based on MagiC, an alternative operating system for the Atari ST. Developed by Sven and Wilfried Behne of 2B, MagiC completely replaces the ST's operating system with an optimised version, resulting in a substantial speed increase. MagiCMac contains the same system along with a kernel of code to translate calls to System 7.

MagiCMac runs as an application under System 7 and includes ASH's replacement desktop, Ease. Printing will be supported in various ways including Powerprint, a hardware utility that converts the Mac's printer signals into those required by a standard Centronics parallel port so allowing Atari owners to use their existing printers. TrueType will also be supported as, in all likelihood, will PostScript. MIDI support is also being investigated.

Compatibility appears to be very good. Atari hard disks can be read directly from the Mac's SCSI port and no reformatting or partitioning is required; MagiCMac treats Mac folders and Atari disk partitions as equal entities. Most well-behaved applications appear to run and as most Atari applications are optimised to run on an 8MHz 68000 processor, their speed on a 68030 or 68040 machine is quite blinding.

MagiCMac will be released in Germany on January 15. UK distribution is being handled by System Solutions which expects the product to sell at under £200. Call 0181 693 3355.



Come on down!
MagiCMac is the solution for Atari owners who need a powerful machine.

New Mac OS delay

The finger-pointing at Microsoft for the constant delays in shipping Windows 95 will have to end. Apple has announced that it has put back the introduction of Copland – the next generation Mac OS – until 1996.

The biggest culprit was said to be the need to untie the Mac OS from the Apple ROMs and hardware to make it easier for other companies to clone the Mac. However, Apple admitted that other



problems were adding to the delay, including the forthcoming PCI-based Mac designs.

Apple has also said that for the first time it will produce separate versions of the OS for PowerPC and 68K Macs, and that it is concentrating its efforts on the PowerPC version.

"We're not going to slow down the schedule for PowerPC to accommodate 68K," an Apple spokesman said, "but neither are we going to ignore 68K users."

FileMaker Pro goes relational

Away from the main Macworld Expo show floor, Claris demonstrated a new version of FileMaker Pro that adds relational capabilities to the best-selling flatfile database for the first time. Working under



the provisional name of FileMaker Pro 3.0, the new version will be available for both Mac and Windows.

Claris declined to name a specific date for the launch but said it would be during 1995.

CONSUMER AFFAIRS

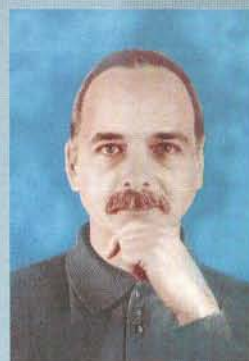
Clone-ic Irrigation

I read somewhere recently that the Yakuza, Japan's tattooed answer to Microsoft, (just kidding...) is infiltrating American cities at a rate that will soon make it the most powerful political organisation in the US – second only to the Republican Party. The Mafia reportedly ranks third followed by the Roman Catholic Church and the Democrats no longer even make the top 20. Here in the UK we're much luckier. Since everything here is kept secret, particularly political funding and influence, we don't know who's infiltrating what. And, despite our own year-end saturation of sleaze and the righteous right-wing resurgence abroad, I can detect none of the angst, anger or urgency that would indicate that it makes a blind bit of difference to anyone. But this is the kind of stuff nobody wants to hear and after all, some weirdness is just too ugly to even gossip about.

But at last month's Macworld Expo in San Francisco, Apple ended some gossip when it introduced two partners that it hopes will infiltrate and influence the computer market with a new generation of MacOS-tattooed clones. Ultimately, Apple hopes that these early providers will successfully expand the Mac's market share and, more importantly, push up profits. But while neither company may agree on exactly what a winning Mac clone strategy is when it's at home, both Radius and Power Computing, as first licensees of the Mac operating system, have literally put their money wherever their mouth is and are hoping for a lottery-like wind-fall to boost their collective profits.

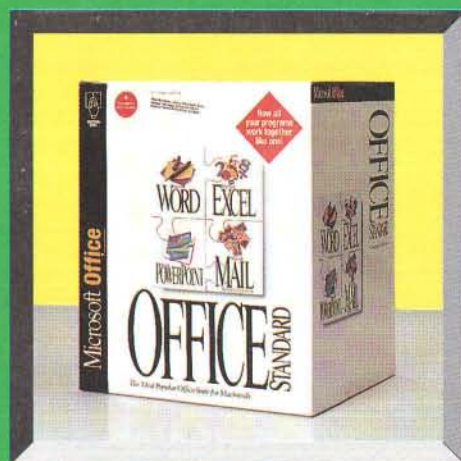
Radius has grabbed the high ground with several models intended for desktop publishing and digital video-editing markets while Power Computing has taken the low road and will focus on inexpensive alternatives to Apple's own consumer offerings. Power Computing claims it will start shipping computers running the Mac operating system in March. They aren't allowed to call them "Macs" and despite the cute MacOS logo, they'll look significantly different from genuine Apple products. As a matter of fact, they'll look remarkably like every other PC clone that real Mac users have learned to fear and loathe over the years. Power Computing expects to sell up to 100,000 units in the first year, including models similar in functionality to the Power Mac 8100/100 and 7100/80. It also hopes to undercut Apple's pricing by ten to twenty per cent through lower overhead costs, less-expensive components and improved manufacturing processes. Initially, most of its computers will be sold via mail order directly to business and home markets, and consumers will be able to ring the company and assemble a custom solution from a wide range of RAM, hard drive and monitor sizes. Radius, now totally confused as to whether it's a monitor, video system or computer supplier, announced its clone plans by demonstrating a high-end, MacOS-based digital video-editing system dubbed VideoVision Workstation. Radius said it will start shipping its Mac clones by the end of June although no final decisions have been made on the configurations or speeds.

Like the Yakuza, Apple has high hopes that the gradual infiltration of Mac clones into the market will grow at a rate that will soon make it the most powerful computing organisation in the US – second only to, perhaps, Microsoft. Here in the UK, Apple and their new PR hacks are characteristically keeping any real or imagined aspirations secret, with heavy hints imparted only to the initiated and privileged few – or at least those that haven't inexplicably fallen off the previous press database. But while these cute clones may turn out to be more attractive than a new pair of snow tyres, I can't help feeling, as the song says, that the thrill is finally gone. There's no fun in Mac-land anymore and despite the thick information gurgling out of the marketing mouths of PR hacks here and in the US, there's no hum of madness or adventure. No wild music or the gut-rending rush of big risk. The only apparent risk might be that as Apple inevitably loses sales to clones, particularly at the low end, its overall revenue may hit the skids or shrink dramatically. But we've all seen that one before. However, the main game here is simply vertical vs volume and both cloning strategies have an excellent chance of success. And even if you count Apple into the equation, neither Radius nor Power Computing has a serious competitor in either of these market areas. That is, unless you believe the anonymous gossip that Oracle, Philips Consumer Electronics and Matsushita have discussed plans to buy Apple and divide it up. Now that might make a few pulses race with angst, anger or urgency...



Michael Prochak

Next time you use your Mac, turn the power on.



Whoever said that power shouldn't go to your head obviously didn't consider this incredible package.

The mind-blowing Microsoft Office 4.2.

It releases the potential of your Macintosh and Power Macintosh thanks to Microsoft IntelliSense™.

For the uninitiated, IntelliSense actually watches how you work, senses what you want to do and intelligently helps you to achieve it.

Put simply, it helps you to concentrate on what you are doing, not how you are doing it.

Complicated charts? Easy as pie with IntelliSense.

What's more, with Office 4.2 you get not one, not two, but three leading business applications. New Word 6.0 for word processing, Microsoft Excel 5.0 for spreadsheets and PowerPoint® 4.0 for presentations.

But what if you upgrade your Mac to Power Mac in the future?

Don't worry, Power Mac versions are available free of charge.

And you can upgrade to Office for up to £200* less if you currently own existing Microsoft software.

For more information or to upgrade today contact your Macintosh reseller.

Either way we're sure you will be turned on.

Apple and Macintosh are registered trademarks or trademarks of Apple Macintosh Inc. Microsoft, PowerPoint and IntelliSense are registered trademarks or trademarks of Microsoft Corporation in the US and/or other countries. *Dealer prices may vary.

Microsoft®

WHERE DO YOU WANT TO GO TODAY?



MAC SHOPPER



Visit the UK's first Mac shopping event!



Among the 70 stands, Apple will be there to welcome you and they will be showing the very latest in their range of multimedia entertainment products.

with a Performa 630 Plus. And what's more, Apple has donated one of these miracle machines to be won in the Prize Draw. See further on for more details of how you could win.

And the fruit bowl doesn't just contain Apple. You will be able to see and buy all kinds of Mac accessories and equipment from the UK's leading Mac suppliers. All tastes and pockets are catered for. Everything from CD-ROMs to cables; manuals to mouse mats; training videos to scanners.

It is not too late to enter your own equipment. Just follow these steps.

- 1 Ring MCD on 01932 571911 and ask for an entry form
- 2 Decide on your reserve (minimum) selling price (MCD can advise here) and return your completed form to the auctioneers.
- 3 Deliver your goods to West Hall, Alexandra Palace between 9am and 2pm on Friday, February 24.

It's really that simple. MCD Computer Auctions can be contacted at: Nelson House, Station Rd, Chertsey KT16 8BE. Tel 01932 571911.

SHOW PREVIEW

FIRST MAC AUCTION IN UK

A unique event is taking place at the Mac Shopper Show. For the first time users and enthusiasts will be able to buy Mac equipment by auction.

MCD Computer Auctions, based in Chertsey, Surrey, have over 10 years experience of auctioning and a reputation for professional service. They will be selling selected, high quality, new and used systems, CD-ROMs, printers, monitors, scanners, software and many other peripherals. Both days over 300 lots will go under the hammer between mid-day and around 3pm, depending on the ferocity of the bidding. Viewing starts at 10am each day and MCD's helpful and qualified staff will be on hand to answer questions on how to bid, guide prices and technical aspects of the kit.

If you are looking for "a lot for your lolly" and the idea of bidding for a bargain is appealing, then the Mac Auction will certainly be worth a visit.

WHEN?

Saturday February 25, 10am - 6pm

Sunday February 26, 10am - 4pm

WHERE?

West Hall, Alexandra Palace, Wood Green,
London N22 4AY

To save money and beat the queues call the **HOTLINE** on 01369 706346 to book tickets and reserve places in the Master Classes.

SEE THE POWER OF INTERNET

There will be a chance to experience the power and potential of plugging into Internet.

Internet is the latest craze to hit the computer world. In a nutshell it is a world-wide communications network that allows you to send and receive information via a modem link. It also allows you to access a huge library of reference data held by institutions and organisations. And at the Mac Shopper Show it won't cost you a penny, so you can see the benefits before deciding whether plugging in is right for you.

HANDS ON IN MICRO-RENT'S USER AREA

Micro-Rent will be sponsoring and operating the Show's User Area, providing a wide range of Macs from Performas to Power Macs from their large rental stock. As visitors, you will be free to try out the latest versions of popular software on different machines so you can decide which best suits your needs.

In addition, on the separate Micro-Rent stand next

door, technical experts will offer further advice on which Macs to buy. For the whole Show Micro-Rent will be offering a special £25 discount to Macworld readers who present the voucher inserted in the February issue. Micro-Rent will be selling a full selection of new Macs, printers & more, plus they will be offering some low-cost ex-rental equipment. Everything comes with a one-year warranty.

fun on ice

With our half price entry voucher for the Palace Ice Rink you can bring your family and let them have fun on the cold, slippery stuff, while you enjoy a hot spot of Mac shopping. Each adult ticket bought [on the day or] in advance, is entitled to one voucher, that can be used at any time during the Show weekend.

BECOME A MAC EXPERT IN THE MASTER CLASSES

The Mac Shopper Show is your chance to move from being a basic user to an expert; or from an intermediate to a Master! MacAcademy, one of the leading US training consultancies, is flying over two of their best, most experienced trainers to lead 12 Master Classes. Here they will pass on not only the "how to do's", but also tips and tricks that are not mentioned in any manuals, but are learned through practice and talking to the right people. **EARLY BOOKING IS ADVISED SINCE THERE IS A LIMITED NUMBER OF SEATS IN EACH ROOM** and at only £5 a place for each 1.5 intensive hour session, it has to be the best value training on the market.

Saturday, February 25.

Room 1		Room 2	
10.30-12.00	Photoshop Basics MC/1	Macintosh - Getting Started MC/5	
12.30-2.00	Photoshop Intermediate MC/2	Advanced Macs MC/6	
2.30-4.00	QuarkXPress Basics MC/3	All About Mac Fonts MC/7	
4.30-6.00	QuarkXPress Intermediate MC/4	Basic Networking MC/8	

Sunday, February 26.

Room 1		Room 2	
10.30-12.00	PageMaker Basics MC/9	Basic Troubleshooting MC/11	
12.00-2.00	PageMaker Intermediate MC/10	Step 2 Troubleshooting MC/12	

Call the Hotline on 01369 706346 to reserve your space TODAY.

WHAT DOES IT COST?

Adults£6 (£5 in advance)

Accompanied Under 16's & Concessions ...£3

Master Classes£5 per place

WIN A DREAM MACHINE IN THE PRIZE DRAW

You could walk away from the Mac Shopper Show with around £2000 worth of kit in the form of the latest Macintosh Performa 630 Plus system. This is a system that comes complete with 7 CD-ROM titles including Microsoft Dinosaurs, Guinness Multimedia Disc of Records, Grolier's Encyclopaedia and an introduction to 4 EC languages. With it you have the power to connect to your camcorder/VCR to cut and paste video images to create stunning home movies. You can also listen to audio CDs and read Kodak Photo CDs. Apple UK have kindly donated this marvellous prize and anyone over 16, who registers to attend the Show will have their name entered in the Draw, so what are you waiting for?

GOT A PROBLEM? WANT AN ANSWER? VISIT THE HELP DESK

Got a problem with your Mac that is driving you barmy? Do you want to do something with your software that isn't covered in the manual? Do you want independent advice on the best equipment for your needs? How often do hang up after spending goodness knows how long increasing BT's profits while waiting in a queue for that elusive technical support person who is always busy; and if you are lucky to get through, they have to call you back with an answer anyway?

For two days you can get personal attention from people who work with Macs constantly and know them inside-out. So come armed with your questions and the experts on the Mac Help Desk will do their best to come up with the answers. Even better, this will be a FREE service for all visitors to the Show. Queries will be

looked at on a first come, first served basis, so make sure you get in early.

The Troubleshooting Master Classes on Sunday, 26 February will also be worth investing in for future, as well as current problem solving — they could save you a great deal of stress and wasted time.

HOW TO GET THERE

Underground The nearest station is Wood Green on the Piccadilly Line.

British Rail The nearest station is Alexandra Palace from Kings Cross.

Buses Take the W3. There is also a free shuttle bus running all day between Wood Green Tube, Alexandra Palace BR station and the Show.

Road Follow the AA signs. There is free parking in the Park.

Product News

By Mary Cowan

HARDWARE

SCSI Plus Bus Repeater and SCSI Switch

Dan Computer Solutions has two accessories aimed at providing solutions to system difficulties.

The SCSI Plus Bus Repeater regenerates the initial information and signal sent down the SCSI lead effectively. It lets you extend the distance a peripheral can be from the computer. Up to three SCSI Plus Bus Repeaters can be daisy chained up to 24 metres.

The SCSI Switch is a "junction box" allowing the choice of connecting to six SCSI buses, giving a choice of peripherals. Ultimately, up to 32 SCSI Switches may be daisy-chained, allowing access to up to 128 SCSI chains.

The SCSI Bus Repeater is priced between £295 and £350; SCSI Switch is priced between £799 and £2,095.

Dan Computer Solutions, 01532 454 375. InfoLine No. 200

NovaJet III

The NovaJet III is a large format colour inkjet printer aimed at CAD/CAM and colour graphics users. It is distributed through Pisa Systems as part of a NovaJet III/PhotoScript 3000 system and TDS CAD Graphics as basic printers.

The printer is available in two sizes, A1 and A0 and features automatic ink level monitoring and signalling. The NovaJet III increases output speed compared to that of the NovaJet II.

It comes with PhotoScript 3000 based on a RISC processor clocked at 40MHz; Agfa Forotune; and PhotoMatch, a colour management package.

TDS CAD Graphics supplies a Windows 3.1 driver but not a Macintosh driver as standard. These are available as an optional extra, priced between £700 and £3,000 (depending on your preferred output). Prices for the basic machine start with the 4MB RAM model at £7,995.

Pisa Systems' NovaJet III/PhotoScript 3000 starter system comes as a complete package with 64MB RAM upgradeable to 128MB for £15,995.

TDS CAD Graphics, 01254 676921; Pisa Systems, 01494 564455. InfoLine No. 201

TouchMates

Ellinor Touch Technology has launched two new versions of its force-sensing TouchMates which allow ordinary monitors to be used as touch screens.

The platform's calibration lets the TouchMate sense the size and

Plasmon products



Plasmon Data and Matsushita Electric have worked together to produce a drive that can read CD-ROM, audio and photo compact discs plus record on to Plasmon's new 650MB (£45) rewritable phase change optical disk. The PD2000e (£750) can read all CD-ROM formats including CD-ROM, XA, Audio CDs and Photo-CDs, and can also read and write to 650MB rewritable optical disks. It incorporates a SCSI-2 interface and will be available either in stand-alone form or as an internal unit.

Headway Computers, 01252 333 575; and Ideal Hardware, 0181 390 1211. InfoLine No. 227

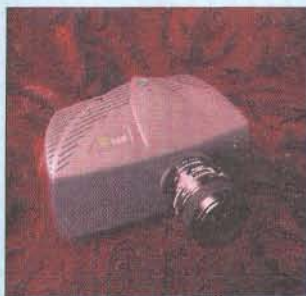
Lumina camera

IMC has been appointed as the UK's first authorised distributor of the Lumina scanner/digital camera.

The camera uses traditional photographic accessories such as Nikon bayonet-mount SLR lenses as well as filters and lighting. The Lumina has a single-pass scanning camera that captures reflective, transmissive and 3D images of still objects. It comes with a SCSI 2-compatible interface and two Adobe Photoshop plug-ins allowing file custom-toning. The files can be saved as 24-bit Photoshop-compatible files that lets the user to manipulate files in Photoshop. Images can be produced with a density rating of 3.0D at 600dpi or 300dpi at A4 output.

The Lumina camera costs £5,995.

IMC, 01753 830 999. InfoLine No. 228



positioning of the specific monitor mounted on it. The two new models allow Mac users with monitors up to 21" to use touch control when connecting the platform to either the modem port or via ADB.

Both versions are supplied with Mac driver software that emulates a standard Mac mouse and both are compatible with System 7. Pricing for the TouchMates has not been confirmed but it is believed to be approximately £650.

Ellinor Technology, 01734 311066. InfoLine No. 202

Hewlett-Packard cuts prices

Hewlett-Packard has reduced the price of several printers including its DesignJet range, 1200 series colour printers and mobile inkjets.

The DesignJet range of wide format ink jet printers, including the 220, aimed at engineering, architectural and construction users, has been cut to £2,370-£3,110, a reduction of 15 per cent. The 600's price has been reduced to £4,450-£5,320, also saving

15 per cent. The 650C has been reduced by 16 per cent to £6,090-£7,190. The 650C is like the 600 but can add colour printing to differentiate or highlight certain areas. Reductions of 30 per cent and 22 per cent can be found on both the 1200C and 1200C/PS colour ink jet printers. The 1200C's new price is £870; the PostScript version (C/PS) is reduced to £1,370. The PostScript upgrade for the 1200C will not be discounted and remains around the £650 mark.

HP has cut the price of the Mac-Powerbook DeskWriter 320 to £249, including a cut-sheet feeder (previously an optional extra). The bundle saves 11 per cent. Alternatively, the Deskwriter 320 can be bought without the feeder for £229. Hewlett-Packard, 0171 730 9000. InfoLine No. 203

NEC Multisync X series

NEC has introduced a series of Plug 'n' Play monitors in various sizes. The Multisync X series, are available in three variations; Value

continues page 32

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When it comes to world class, UMAX is in a league of its own. it's no surprise that top reviewers world wide are raving about our new range of superb desktop scanners. From scanners designed for general office use and desktop publishing like the revolutionary Vista-S6, all the way up to the incredible Powerlook - a genuine contender for the best prepress desktop scanner, there is sure to be a Umax that is right for you.

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Sharp JX330

Sharp Electronics has launched the JX330 colour scanner aimed at professional users. Replacing the JX-325, the 600dpi JX330 can scan up to 16.7 million colours with 256 shades of grey and can produce scans up to 2,400dpi. The scanner comes with a SCSI 2 interface and Adobe Photoshop; scanning utility software and built-in TWAIN support. The basic machine price starts at £1,395; and there is an optional automatic document feeder that can carry 50 pages. Sharp Information Line, 0800 262 958. InfoLine No. 229

(XV), Efficiency (XE) and Professional (XP). For home-users, corporates/businesses or high-end graphics application users, NEC claims that all the difficulties associated with system installation have been eliminated. The screens can be controlled via the On-Screen Manager, a series of pop-up menus allowing you to edit the monitor controls on-screen. The XE and XP versions come with extra software allowing further monitor functions such as colour management and resolution switching. The range is priced between £319 and £2,499 and is available in sizes from 14- to 21-inch.

NEC, 0181 993 8111. InfoLine No. 204

Mk II/III Digital photographic film recorders

IMC has launched two photographic film recorders aimed at photographers, designers and labs. The two models, LFR Mk II Digital and MkIII Digital use sophisticated Cathode Ray Tubes that eliminate "Halo-ing" effects common with negative film models and have resolutions of 4096 x 2731 pixels (Mk II) and 8192 x 5462 pixels (Mk III) with 24-bit colour. Prices are £11,750 and £18,750 respectively. IMC, 01753 830999. InfoLine No. 205

Seiko Colourpoint2 PSF

Ambitron has recently announced that it will be offering the new Seiko Colourpoint2 PSF in A4 (model 04) and A3 (model 14). The printers, which are the first to include Adobe's PostScript level 2 software embedded in a colour printer, have 39 resident fonts (taken from Adobe's Type Library), 33Mhz Intel RISC controller, an engine speed that puts out an A4-size document in about 60 seconds, a built-in hard disk with either 80Mb or 160Mb, expandable RAM memory of up to 136Mb and are priced between £5,675 (A4) and £7,290 (A3).

Ambitron, 01734 440 500. InfoLine No. 206

MultiTech MT2834

MultiTech has begun shipping its V.34 class-compatible fax/data modem, the MT2834, for the Mac. Apart from the new class, the MT2834 operates at V.32terbo/V.32bis and all lower speed standards. The new modem also provides V.42 error correction and data compression.

MultiTech's MT2834 can send and receive faxes at 14.4, 9.6 and 4.8Kbps which should ensure compatibility with any V.17 or Group 2/3 fax machine, card or modem.

The MT2834 costs £699 and is available immediately. Computers Unlimited, 0181 200 8282. InfoLine No. 207

CalComp CCL 600ES Printer

CalComp has replaced its 600dpi CCL 600XF printer with a new model. The A3/A4 CCL 600ES prints at twice the speed and includes a port for an external SCSI disk. CalComp has also announced a 1200dpi model (CCL 1200ES) and lowered the price of the basic CCL 600S model. The new models (CCL 600ES/1200ES) are the first CalComp printers to offer Adobe's PostScript level 2 software and comes with 65 PostScript fonts.

Both models can print at up to 16 pages per minute at A4 or 9ppm at A3. The 600ES has a standard memory of 8Mb RAM expandable to 40Mb while the 1200ES has 16Mb as standard and is also expandable to 40Mb for printing images at 1200x600dpi. Adobe's PostScript driver for Macintosh is included with both as well as a PostScript language driver for AutoCAD. Appletalk, serial, parallel, SCSI and Ethernet ports are fitted to both machines as standard. The CCL 600ES costs £3,095, the CCL 1200ES £3,795 and the basic CCL 600S costs £2,395.

CalComp Ltd, 01734 320032. InfoLine No. 208

Nikon cuts price of its 35mm film scanner

Nikon has cut the price of its Coolscan 35mm film scanner from £1,995 to £1,695. Nikon hopes that the 15 per cent reduction will the Coolscan within the range of

the increasing number of personal home users.

Distributed by DirekTek, 0181 845 5969. InfoLine No. 210

Professional Colour Printer

Mitsubishi has launched a 300dpi thermal transfer printer called the Professional Colour Printer (PCP), which it claims costs less per copy than an ink jet printer at between 39 and 85 pence per copy. A full colour A4 page takes a minute to print.

Priced at £795, the PCP does not come with a Mac driver. A hard/software solution/upgrade kit to convert the PCP to Mac status costs £395.

Mitsubishi, 01707 276100. InfoLine No. 211

MediaVision Reno

MediaVision has launched a double-speed CD ROM player compatible with both Mac and PCs. Reno is an external drive with an access time of less than 180ms and is capable of transferring data at 306Kps. The drive is fitted with a 64K buffer memory and supports Photo CD Multi-session. It connects to both notebooks and desktops via SCSI and costs £254.

MediaVision, 01494 465050. InfoLine No. 212

Security boxes

Boxx Security, traditionally a gun-safe manufacturer, is now producing a range of computer-safes for storage of machines when users are away from the office or home.

Prices for the safes start from £141; each safe conforms to BS standard 7558, which stipulates

continues page 34

Fargo Pictura 310

The Fargo Pictura is a dye sublimation and wax transfer colour printer capable of handling media up to A3 Plus size. It produces continuous tone, photo-realistic, 24-bit, colour or 256 level monochrome dye sublimation prints as well as wax thermal transfer colour proofs up to 12" by 20".

It supports Agfa FotoTune, Apple ColorSync, Kodak Color Matching System and DayStar Digital ColorMatch. Optional extras include Adobe PostScript Level 2 at an RRP of £599.

Bannerbridge, 01268 419 101. InfoLine No. 230



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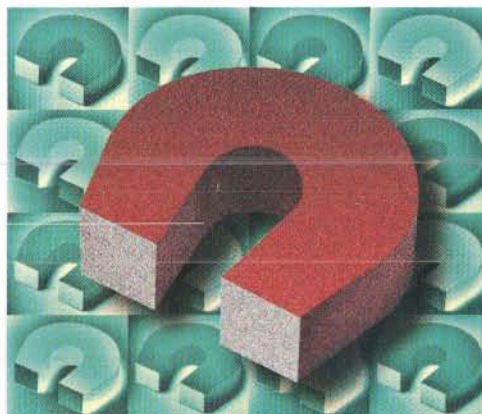
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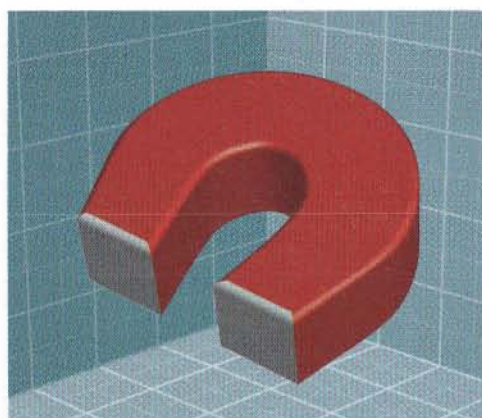


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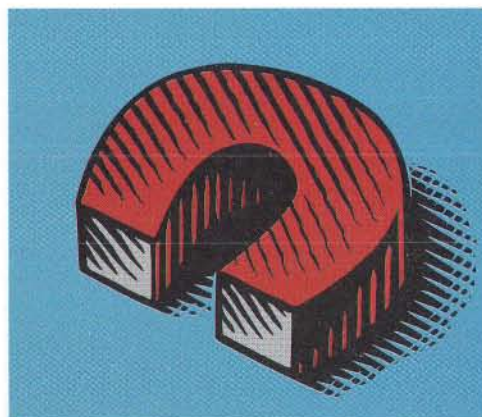
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Adobe Illustrator™ – a leading illustration and page design tool. Makes it easy for you to create and refine electronic artwork.

Product News

that it must withstand attack for more than five minutes.

Boxx Security, 01494 558181.
InfoLine No. 213

VideoGig

VideoGig is a removable storage drive in a variety of capacities, the smallest at 1.7GB and the largest at 4.1GB. The user can also buy an optional bay which houses six cartridges to a maximum storage capacity of 24.6GB; and all cartridges can be interchanged.

VideoGig uses a thermal calibration solution that sustains an optimal data rate. Included in the bundled sub-system is a removable cartridge, the drive, a docking station, cables and Mountain Gate's Mac formatter. All VideoGigs come with a two year warranty and Mountain Gate also guarantees same-day replacement. Bundled sub-system prices start at £1,667 for the 1.7GB capacity version.

Mountain Gate, 01256 464767. InfoLine No. 214

Mitsubishi 21T monitor

Mitsubishi's 21T monitor incorporates its own aperture grille design and Diamondtron tubes.

The 21T comes with full digital control and automatic power management is provided, which can be controlled by the user. Typical resolution is 1280 x 1024 pixels, with a maximum of 1600 x 1200. The monitor can be preset to initially dim, and later shut down the screen, if left on but not in use. The Mitsubishi 21T costs £2,295.

Mitsubishi, 01707 276100.
InfoLine No. 215

ASK Impact projection panel

ASK Impact WSX, an LCD projection panel supporting Apple Macintosh II systems is now available from CRT and costs £11,995.

The active matrix panel can display up to 16.7 million colours and has a typical contrast level of 100:1. An audio facility is supported through an optional video

Media 100

Data Translation's Multimedia Group has introduced a new version of Media 100, and cut the price by 25 per cent to £7,195 for the base system.

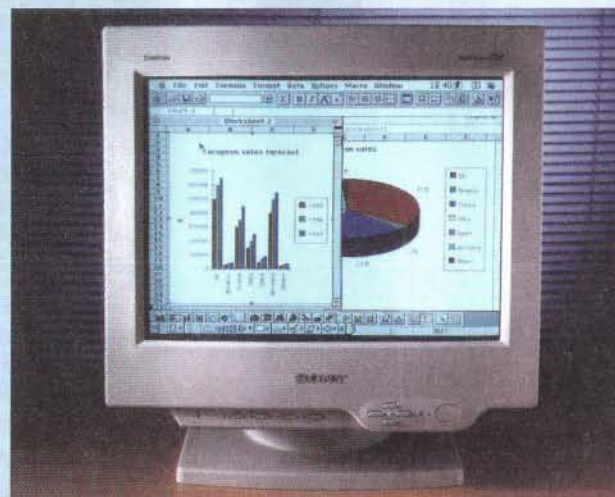
Media 100 captures complete source video and CD-quality audio and stores them digitally on standard SCSI disk drives. It has been designed to make editing easy: all controls are available from the Media 100 graphic user interface. Online-quality programs with images rival high-end broadcast video, including effects, graphics and titles – full-motion, full-resolution, full-frame video at compression levels as low as 4:1.

Media 100 version 2.0 new features include: improved picture quality; QuickTime Codec; MotionFX; dual subsampler; improved editing enhancements including trim mode; new project and media management; real-time audio panel; dissolve-FastFX; fast static title; and it is native on Power Mac. Additional options include all-on-one mastering; more Fast FX; on-the-fly Powerlog format; and auto digitising for £3,195. The HDR Option costs £3,195, and offers highest image quality: up to 150KB (NTSC) and 180KB (PAL).

Data Translation, 01734 796 100. InfoLine No. 231



Sony 17-inch Trinitron monitor



Sony has announced a 17-inch Trinitron monitor featuring ASIC-based Digital Multiscan technology and support for all video modes on Quadra AV models and PowerMacs, including 1,024 x 768 at 75Hz.

The 17sf is a larger screen version of the Multiscan "sf" family and a direct replacement for the Sony CPD-1730. The monitor uses the Sony Digital Multiscan technology to provide continuous scan capability. Other features of the Multiscan 17sf include colour temperature control and a Dynamic Quadrapole Lens (DQL) electron gun system for a less distorted spot shape. The Trinitron CRT has a 0.25mm pitch Aperture Grille of this vertical openings, which allow more electrons to reach the screen's colour phosphors.

Priced at £749 it can handle resolution up to 1,280 x 1,024 at 60Hz (non-interlaced) or 1,024 x 768 at 80Hz, as supported by third-party video cards.

For more details call Sony on 01932 816 650. InfoLine No. 232

adapter and the LCD Panel's weight is 2.8KG measuring 310 x 310 x 60mm.

CRT Displays Ltd., 0141 427 4333. InfoLine No. 216

SOFTWARE

Now Up to Date 3.0

Now Up to Date 3.0 workgroup scheduling package and Now Contact 3.0 contact management software are available "now".

Now Up to Date features a button bar, scrolling calendar views and a date and time chooser. Contact's enhancements include the ability to share contact information over a network and new entry aids that eliminate redundant data entry. Contact 3.0 lets you track all contacts and maintain a history of your interactions with them.

There is an introductory price of £49 each while stocks last, rising to £69 each. Bundled together, Now Contact 3.0 and Now Up to Date 3.0 cost £89.

Now Software, 01525 237100.
InfoLine No. 218

Interact

Design and Technology Management has released its business management software, Interact. It is

designed to control business communications, and is based on a database manager with four separate modules. These can be used individually, and have been designed to exchange information and work together as an integrated system. The four modules comprise a contact manager, diary manager, project manager and document manager. Prices for Interact start at £99.

Design & Technology Management, 0181 395 7192. InfoLine No. 219

Ray Dream Designer

Ray Dream Designer, the 3-D illustration package, is now available for PowerMacs. Existing users of the standard 680X0 processor version who upgrade to a Power Macintosh, and use the Native version of Ray Dream Designer, should see a speed increase of between two and four times that of the standard version.

Full version 3.1 costs £275. The v.3.0 to v3.1 PowerPC upgrade for existing users is available from Version II Version.

Principal also announced Ray Dream's addDepth, a graphics application that adds depth and perspective to line art, allowing

continues page 37

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The PowerLook features a maximum scanning resolution of 2400dpi and a density range of 3.0D*, making it possible to capture fine details of highlight and shadow with sharp precision.

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- High density range: 3.0D.*
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- Low-noise mechanics.
- Transparency adaptor included.
- MagicMatch color calibration software included.
- Adobe Photoshop included.



Other color scanners from UMAX include the affordable, three-pass Vista and the speedy, one-pass Vista-S6.

*For transparencies with 30-bit colour output.

IMC

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Tel : +(0753)830-999
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Product News

users to design 3-D graphics. addDepth supports TrueType and PostScript Type 1 fonts, and Adobe's Illustrator and Freehand. Tools include the ability to control depth, extrusion and bevels; vanishing point perspective; and orientation in three dimensions. addDepth costs £108.

Principal, 01706 832000; Version II Version, 01706 832402. InfoLine No. 220

TransJammer

TransJammer from Elastic Reality is the first software to offer transitional effect plug-ins for Adobe Premier. It is a collection of 100 transitional effects from which 800 variations can be created.

It can also be used as a stand-alone package to produce QuickTime slide shows. Cost is £99. Softline Pro, 0181 401 1234. InfoLine No. 223

Image Library 30

Kodak has announced that it will be distributing Image Library 30 direct. The library is a digitised image database with thousands of images, featuring audio and movie clips, and stills.

It lets users search, store, and retrieve electronic files; output images; import images as Adobe Photoshop, Aldus PhotoStyler and save to other file formats.

The Image Library 30 includes Photo CD image management software, Kodak Juke Box Manager (JBM) and the Kodak Jukebox 100 automated disc library. The jukebox automatically loads the correct CD for the thumbnail size image selected by the user on screen. The system can search up to 10,000 thumbnail images in a ten second period. It is priced at £6,995.

Kodak, 01442 61122. InfoLine No. 221

OmniForm

OmniForm is a cross platform information collection and processing system for the Newton MessagePad. Currently being used by Comag Magazine Marketing as part of its merchandising information collection solution, OmniForm generates electronic forms, and handles form distribution and information retrieval.

OmniForm's server mode automatically uploads forms and down-

loads data to the Newton MessagePad through a direct serial connection or remote modem connection.

The entry level single user version OmniForm Lite costs £499. OmniForm products are distributed by TBS, 01773 828 766. InfoLine No. 224

KPT Convolver

KPT Convolver, a production tool from HSC Software that works with Adobe Photoshop and other graphics packages, is now available from Principal. KPT Convolver lets users access custom convolution kernels that generate custom graphic filter effects.

A user interface guides you through the options with effects previewed in real time.

Existing registered users can obtain KPT Convolver for £69 until the end of January. KPT Convolver will be shipped in February for Mac and PowerPC at a price of £129. It requires an image processing package that fully supports the Adobe standard plug-in architecture.

Principal, 01706 832000. InfoLine No. 222

CONNECTIVITY

Asanté plug-and-play hub family

Asanté Technology has announced the addition of a 24-port hub to its existing plug-and-play line of ethernet hubs; a redesign for its current 8- and 12- port versions; and the addition of a 6-port BNC hub.

These latest hubs feature a larger LED display and built-in coexistent support for RJ-45, AUI and BNC ports.

The plug-and-play hubs are compliant with the IEEE 802.3 specifications for ethernet and support various network operating systems and protocols, including Novell NetWare, Microsoft LAN manager, NetBIOS and AppleShare.

The new product prices start at £18 per port and have a lifetime warranty.

Prices are: 10THub/8, £145; 10THub/12, £325; 10THub/24, £545; and BNC Hub/6, £289.

For more information, contact Ingram Micro on 01908 260 422; or Frontline on 01256 20534. InfoLine No. 225

Out of the Sun

Domark Software has released Out of the Sun (£24.99), a flight simulator that puts the player in 17 of the most famous aircraft of World War II (including the Spitfire and Messerschmitt). The player also has the choice of which battle to fight.



The next product due for release from Domark is Bandits - The Great Aces of Air Combat, a flight simulator which allows solitaire and dual player action including "follow the leader" game play and features air-fighters from both World Wars and Korea. No price has been set for this.

Domark will also be releasing two flight simulators over coming months on CD entitled Absolute Zero (where you pilot a supersonic attack over frozen Jupiter skies) and Test Pilot Multimedia (which features aircraft history as well as a flight simulator). Both will sell for £39.99.

Domark Software, 0181 780 2222. InfoLine No. 233



Mike Oldfield CD

If you're a fan of Mike Oldfield his latest album will be of particular interest: a limited edition format of his latest CD The Songs of Distant Earth featuring an interactive programme. Based on the book by Arthur C. Clarke, the CD track is based on the time prior to the sun exploding, when the inhabitants of the earth board a gigantic spaceship in search of a safe haven.

The CD is only compatible with Macs and as a result Apple is running a promotion that lets users find access to a Mac if they haven't one. There is a free-phone number on the back of the album, 0800 127 753, that puts users in touch with their local Apple dealer. The dealers will give users the opportunity to play Oldfield's CD and enter users in a competition to win a new Mac. InfoLine No. 234

Soccer CD

Pearson New Entertainment and Carlton Communications have collaborated to launch the Ultimate Encyclopaedia CD-ROM series. Developed from Carlton Books' Ultimate Sports Encyclopaedia series, the first product is the Soccer CD, and will be

followed by Formula 1 and Golf. It is available in four European languages (English, French, Dutch and German) as well as Japanese. The CD is expected to retail for around £30 but as yet no shipping date has been set.

Pearson New Entertainment, 0171 331 3920. InfoLine No. 235

The Mask

You've probably seen the film, read the comic book series, now you can play the CD. The first CD in a new series, The Mask: The Origin is a compilation of the first five Mask comic book titles.



It features over two hours of music and dialogue with 50 characters, hundreds of illustrations from the comic book and QuickTime movies. The CD is available through Activision and has a retail price of £24.99. Activision, 0181 742 9400. InfoLine No. 236

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Correct Grammar (most powerful grammar checker)	£29.00
Concise Oxford Dictionary (on floppy disks)	£45.00
Oxford English Dictionary (the whole thing on CD ROM)	£425.00
Thunder 7 (single spellcheck & thesaurus for all apps)	£59.00

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FoxPro 2.6 (fast DB with great interface, reads dBase)	£85.00
QuickDex II (phenomenal rolodex card type database)	£32.00
SuperQuickDex (includes powerful print capability)	£62.00
TouchBase/DateBook Bundle (contact & calendar)	£35.00

BUSINESS

TIME/OFFICE MANAGEMENT

AutoRoute Express (UK route and distance planner)	£99.00
In Control (best to-do list manager, outliner, columns)	£89.00
MacProject Pro (powerful, straightforward and flexible)	£355.00
Microsoft Project (full featured for most requirements)	£335.00
Now Up-To-Date 3.0 (calendar and reminder system)	£59.00
Now Up-To-Date & Now Contact Bundle	£89.00
SignPost (UK, Europe, USA route planner)	from £79.00

SPREADSHEETS, GRAPHS & CHARTS

Microsoft Excel 5.0 (market leader, great features)	£265.00
DeltaGraph 3.5 (popular, varied 2D & 3D graphing tool)	£115.00

INTEGRATED SOFTWARE

Microsoft Office 4.2 (Word, Excel, PowerPoint)	£375.00
ClarisWorks 3.0 (market leader of the integrated world)	£110.00
Microsoft Works 4.0 (WP, DB, Comms, Draw, Sheet)	£99.00

ACCOUNTING

Access 3.0 (European multi-user office accounting)	from £395.00
MacMoney 4 UK (home accounts/budgeting package)	£59.00
MYOB (fully integrated single user business accounts)	£149.00
Ritz (powerful and comprehensive for smaller business)	£245.00
Sage Bookkeeper (accounting's biggest name)	from £110.00

PRESENTATION

Astound (full featured, reads PowerPoint & Persuasion)	£99.00
Claris Impact (multi functional presentation tool)	£179.00
Persuasion 3.0 (high end presentations with outliner)	£255.00
PowerPoint 4.0 (powerful, intuitive, easy interface)	£265.00

GRAPHICS

POSTSCRIPT GRAPHICS

Freehand 4.0 (professional PostScript drawing & text)	£315.00
Illustrator 5.5 (pro PostScript drawing, text & layout)	£355.00
Streamline 3.0 (superb PostScript auto-tracing tool)	£125.00

PAINT & DRAW

BrushStrokes (Claris' low end paint program)	£39.00
Canvas 3.5 (high end draw/paint package using layers)	£245.00
Dabbler ('low end' Painter)	£65.00
Fetch 1.2 (superb image database system)	£149.00
IntelliDraw 2.0 (Aldus' brilliant new package)	£115.00
ClarisDraw (powerful, easy to use draw package)	£220.00
Painter 3.0 (the premiere painting program)	£295.00
Sketcher (grey scale version of Painter)	£55.00
SuperPaint 3.5 (24 bit colour, paint & draw)	£110.00

DARKROOM & RETOUCHING

Collage ('collage' Photoshop files together)	£225.00
Debabelizer Lite (converts graphic file types)	£89.00
Kai's Power Tools 2.1 (amazing filters for Photoshop)	£99.00
PhotoShop 3.0 (the pros choice, now even better)	from £399.00

CAD & MODELLING

Dimensions (Adobe's 3D extension for Illustrator)	£130.00
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SURF THE DIGITAL HIGHWAY

1993 was the year of MultiMedia
1994 was the year of the CD ROM
1995 is the year of the Internet

The MacLine Internet Gateway is set up specifically for UK Mac users. On our home server you will find applications that will allow you to access different parts of the Internet in different ways. You will also find information that explains aspects of the Internet and you will find the MacLine Home page which has jump off points to other parts of the Internet that you may enjoy as a Mac user. You will find news and reviews, shareware for downloading, our entire catalogue can be consulted on-line with new and up-to-date product reviews. If you join MIG, we will provide you with a unique E-Mail address which will give you the power to communicate across the world for the cost of a local call.

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Infini-D 2.6 (leading 3D modelling & rendering tool)	£445.00
Kai's Power Tools Bryce (3D Skies and landscapes)	£99.00
MiniCad (native professional 3D design & analysis)	£495.00
Ray Dream Designer (3D design and modelling)	£235.00
StrataVision 3D 2.0 (24 bit photo realistic rendering)	£415.00
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PageMaker 5.0 (fabulous new version)	£449.00
Quark Xpress 3.3 (the professional's choice)	£599.00
Quark Xpress 3.3 (Power Mac Native)	£665.00
Typestry (create 3D fonts with textures)	£165.00
TypeStyler (manipulates PostScript fonts)	£99.00

Fonts

Monotype Font CD 4.0 (Monotype & Adobe Fonts, plus more!)	£49.00
ATM 3.6 (smooths screen and print fonts)	£39.00
Fluent Laser Fonts (120 excellent PS & TrueType fonts)	£69.00
Super ATM (view documents without the fonts installed)	£85.00
Fontographer 4.1 (best professional font creator)	£345.00
Type Reunion (gives hierarchical font menus)	£45.00

PRINTERS

DEC Laser 1152 (300dpi A4 PostScript laser)	£535.00
Epson Stylus 720 (brilliant quality inkjet)	£375.00
Epson EPL 9000 (600dpi A3 PostScript)	£1895.00
Fargo Primera (low cost, high quality colour A4)	£899.00
GCC BLP Elite 600 (fast, PostScript, 4Mb, edge to edge)	£1195.00
GCC SelectPress (A3 600dpi, edge to edge)	£2995.00
HP DeskWriter 320 (portable colour inkjet)	£199.00
HP DeskWriter 520 (superb new inkjet, AppleTalk)	£225.00
HP DeskWriter 560C (colour and mono in one)	£425.00
LabelWriter II (mini thermal printer produces labels)	£159.00
Texas MicroWriter (300dpi A4 PostScript laser)	£535.00
PowerPrint (driver and cable for non-Apple printers)	£125.00

MONITORS

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Formac 17" Trinitron Monitor	£595.00
Trinitron 20" Monitors	from £1295.00
Radius Pivot (unique tilt system)	from £545.00
Radius 20" Colour Monitors	from £1545.00
Supermac/Thunder Video Cards	from £355.00

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Microtek ScanMaker II (great quality 600dpi)	from £445.00
Nikon CoolScan (35mm slide scanner)	£1595.00
Nikon AX1200 (fast, 1200dpi res A4 desktop scanner)	£1095.00
OmniPage 5.0 (OCR directly into applications)	from £245.00

MULTIMEDIA

VideoVision (Radius' superb video digitiser)	from £1595.00
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Morph II (morph from one QuickTime movie to another)	£139.00
Premiere 4.0 (Adobe's brilliant QuickTime editor)	£399.00
Video Director (edit your home videotapes)	£120.00

PC COMPATIBILITY

Access PC 3.0 (read/write PC floppies from your Mac)	£65.00
DOS Mounter Plus (same as above)	£59.00
MacLink Pro (best Mac/PC link with 100's translators)	£110.00
PC Exchange (Apple's own brand software)	£49.00
Soft PC (DOS emulation on a Mac)	from £79.00
SoftWindows (run Windows on a Power Mac)	£249.00

COMMUNICATIONS

ISDN Cards (Planet, OST and others)	from £725.00
Sportster FaxModem (14,400 baud, BABT approved)	£159.00
Sportster FaxModem (28,800 baud, BABT approved)	£239.00
Personal Microphone (low cost but powerful comms)	£45.00

TelePort (quality modems from Global Village) from £99.00

POWERBOOK

CPU (excellent collection of PowerBook utilities)	£49.00
Car Power Adaptor (plug in to the lighter)	£49.00
Hard Drive (250Mb Quantum internal drive)	£325.00
Inline Sync (syncs files between PowerBook & Mac)	£55.00
On The Road (automatic deferred printing & faxing for P.B.s)	£79.00
PowerBook Carry Case (Apple or 3rd party)	from £19.00
PowerPort (Global Village internal fax modems)	from £99.00
WizTools Powerbook (excellent suite of utilities)	£55.00

NETWORKING

RunShare (up to 5 times quicker file transfer)	from £100.00
Anet (LocalTalk (AppleTalk) connector boxes)	£14.00
MNet (PhoneNet connector boxes)	£12.00
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Timbuktu Pro (control Mac/PC screens over network)	£125.00
AsantePrint (Ethernet to AppleTalk printer router)	£275.00
EtherWave (daisychain Ethernet from Farallon)	£165.00
Ethernet Cards (Asante, Shiva, Focus)	from £69.00
Ethernet Tranceivers (Asante, Shiva, Focus)	from £36.00

HARDWARE

INPUT DEVICES

Extended Keyboard (15 function keys, numeric pad)	£59.00
Wacom ArtPad (handy stylus and tablet)	from £145.00
Logitech MouseMan (small alternative mouse)	£45.00
MacHandwriter (character recognition A4 tablet)	from £265.00
MacRecorder Pro (quality mike editing software)	£225.00
Optical Mouse (no ball to get dirty and stick)	£69.00
QuePad (perfect for most arcade type games)	£39.00
QueStick (joystick for the control you've always wanted)	£59.00

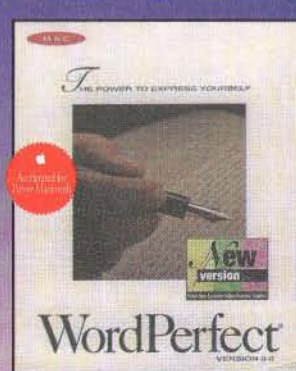
ACCELERATORS, CHIPS AND BOARDS

Daystar Turbo 040 (68040, faster than a Quadra)	from £545.00
Daystar Power Pro (PowerPC accelerators)	from £1295.00
Radius Rocket (faster than an FX, 25MHz 040)	from £995.00
Math Co-Processor (speed up your Classic II or LQ)	£39.00
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ACCESSORIES

Cables (we have a wide range - please ring)	call
Toners/Ink Cartridges (for laser & inkjet printers)	call
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SIMM	1Mb SIMMS - 80ns (1 * 2)	£32
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SM2MB	2Mb SIMMS - 80ns	£59
SM4MB	4Mb SIMMS - 70ns	£110
SMN4	4Mb SIMMS - (72pin) 60ns	£110
SM8	8Mb SIMMS - 70ns	£255
SMN8	8Mb SIMMS - (72pin) 60ns	£235
SM16	16Mb SIMMS - 70ns	£440
SMN16	16Mb SIMMS - (72pin) 60ns	£420
SP06	PowerBook Memory (all sizes)	call

Security Systems (is your Mac vulnerable to theft?) ... from £29.00
Tilt & Swivel stands (for Classics and monitors) ... from £24.00
Mac Carry Bag (Plus, SE, Classic) ... £55.00

PROGRAMMING

Frontier (first Finder level scripting system for the Mac) ... £295.00
HyperCard 2.2 (new version, more power) ... £95.00
Metrowerks Code Warrior (Compiler for 68k code or P.Mac native) ... from £65.00
Symantec C++ (best object oriented programming tool) ... £279.00
SuperCard 1.7 (more powerful than hypercard) ... £225.00
Think C 6.0 (the leading Mac app development tool) ... £159.00
Think Pascal 4.0 (excellent developer level compiler) ... £139.00
FutureBasic (far and away the best Basic for Mac) ... £125.00

EDUCATION

UP TO 12 YEARS
Fine Artist (great fun paint program) ... £37.00
Kid Desk (desktop for kids, protects your own data) ... £29.00
KidsTime (5 learning programs for the 3 to 7 year old) ... £32.00
KidsMath (takes kids from counting to arithmetic) ... £32.00
KidPix II (wonderful paint program with sound effects) ... £34.00
Launch Pad (animated desktop, secures your files) ... £35.00
NumberMaze (award winning arithmetic tutor) ... £39.00
Peter Pan (the eternal favourite) ... £27.00
ReadingMaze (letter recognition to sentences) ... £39.00
Spelunx (brilliant game-like learning environment) ... £29.00
Storybook Weaver (build your own stories) ... £23.00
Swamp Gas Europe (geography learning game) ... £25.00
Yearn to Learn: Peanuts (basic learning skills) ... £37.00
Yearn to Learn: Snoopy (5-9 age group learning skills) ... £39.00
FROM 10 YEARS UP
Visions (detailed astronomical horoscopes and charts) ... £29.00
Creative Writer (DTP for kids) ... £37.00
EarthQuest (a new type of multi curricular learning) ... £34.00
MacGlobe (complete world info, maps, Essential) ... £39.00
Decimals & Fractions Maze (helps older kids) ... £39.00
Typing Instructor (good training from basics to touch) ... £25.00
Voyager Astronomy (fascinating desktop planetarium) ... £105.00
Where in World is Carmen DeLuxe (geography based) ... £49.00
Special low Education prices are available on some products, including Microsoft, Claris and others to authorized educational establishments with Educational Purchase Orders.

CD ROM

GENERAL/GAMES
CD ROM Toolkit (speeds up CD access) ... £59.00
7th Guest (an incredible real time 3D adventure) ... £35.00
A Hard Day's Night (The Beatles Movie on CD) ... £29.00
Ancient Lands (multimedia history) ... £39.00

EVERY MAC SHOULD HAVE ONE

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Beethoven's 9th (the symphony and all about it) ... £65.00
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Iron Helix & Dark Seed (fantastic space/adventure bundle) ... £25.00
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MYST (magical mystery adventure) ... £35.00
"Prince" (music and multimedia from the great one) ... £35.00
Return to Zork (multimedia adventure game) ... £35.00
Rebel Assault (Star Wars like game - brilliant) ... £35.00
Theme Park (create the best theme park ever!) ... £34.00
Xplora (Peter Gabriel's amazing multimedia CD) ... £29.00

EDUCATIONAL
Arthur's Teacher Trouble (interactive story book) ... £29.00
Arthur's Birthday (more Arthur) ... £35.00
Dinosaurs (the "must have" CD of the year) ... £45.00
Grandma and Me (delightful kids story) ... £29.00
Harry and the Haunted House (the new best seller) ... £34.00
KidPix Studio (KidPix plus animation) ... £35.00
Learn to Speak French (aah... learn to speak French) ... £115.00
Math Workshop (math tutoring 5-12 age group) ... £34.00
Peter and the Wolf (interactive fairy tale) ... £29.00
Ruff's Bone (adventures with Ruff the dog) ... £35.00
Tortoise and the Hare (well...) ... £29.00
The Journeyman Project (amazing 3D adventure) ... £45.00
Thumbelina (interactive fairy tale) ... £29.00
Wallabee Jack (wonderful interactive kids cartoon) ... £27.00

REFERENCE
3D Atlas (simply wonderful) ... £49.00
Art Gallery (Microsoft's tour of the National) ... £39.00
Book Shelf (superb CD ROM for everyday reference needs) ... £75.00
Cinemania (19000 movie reviews and more) ... £39.00
Distant Suns (astronomy based cd) ... £65.00
Dictionary of the Living World (award winning) ... £29.00
Encarta (fantastic multimedia encyclopedia) ... £79.00
Grippers Encyclopedia (21 volumes, 9 million words!) ... £89.00
Halliwell's (the famous film encyclopedia on CD) ... £25.00
How Computers Work (excellent guide to technology) ... £40.00
Jupiter (photos of the comet impact) ... £26.00
Macbeth (the Scottish Play) ... £65.00
Musical Instruments (Microsoft's excellent entry) ... £39.00
Oxford English Dictionary (the whole thing on CD ROM) ... £425.00
Red Shift (superb astronomy program) ... £45.00
Shakespeare Complete Works (at your fingertips) ... £65.00
Small Blue Planet (pictures, geography of the planet) ... £49.00
Star Trek Interactive Tech Manual (tour de Enterprise) ... £35.00
Warplanes (an interactive history) ... £49.00
Wild Blue Yonder (US fighter planes, stunning) ... £35.00

MUSIC

EZ Starter Kit (MIDI interface, EZ Version, book) ... £175.00
Concertware Pro (composer and player) ... £189.00
Practica Musica (teaches music theory and ear training) ... £75.00
SongWorks (interactive music composition) ... £75.00
Super Studio Session (8 voice composer and player) ... £69.00
MIDI Interface ... £59.00

UTILITIES & DA's

PRODUCTIVITY ENHANCERS, FILE & DISK MANAGEMENT
At Ease (secure Finder replacement) ... £35.00
Conflict Catcher II (INIF manager and more) ... £49.00
CDU (excellent collection of Desktop utilities) ... £49.00
DiskDoubler (last file compression) ... £39.00
DiskDoubler Pro (DiskDoubler, AutoDoubler, CopyDoubler) ... £65.00
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Now Utilities 5.0 (suite of essential utilities) ... £65.00
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QuickDex II (lightning fast DA database, essential) ... £32.00
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Stuffit DeLuxe (famous file compression program) ... £59.00
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WindowWatch (logs time usage of windows) ... £85.00

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Citadel (lock your info from prying eyes) ... £59.00
DiskGuard (control access to your hard drive) ... £69.00
Empower (file & data security) ... from £120.00
MacPrefect (secures most aspects of the Finder) ... £30.00

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Disney Screen Saver (simply magical) ... £27.00
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The Far Side (Larson at his best) ... £29.00
The Flintstones (cartoon, movie and now...) ... £19.00
The Simpsons (irreverent humour) ... £29.00
Underware (humorous screen saver) ... £25.00

BACKUP & VIRUS PROTECTION
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Redux DeLuxe 2.51 (powerful floppy backup) ... £49.00
Retrospect 2.1i (most sophisticated archival backup) ... from £145.00
SAM 4.0 (Symantec's anti virus utility) ... £55.00
Virex 5.0 (best virus tracer & eradicator of all) ... £59.00

ENTERTAINMENT

ARCADE
✓Best Sellers Pack (Helicats, Spectre, SuperTetris) ... £32.00

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325Mb	£299.00			£155.00
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1000Mb	£675.00	£575.00	£625.00	£425.00
2000Mb		£1075.00	£999.00	£849.00
4000Mb				£1845.00

120Mb Optical Drive	£575.00
230Mb Optical Drive	£675.00
D2 88Mb Syquest Drive	£270.00
D2 200Mb Syquest Drive	£399.00
2Gb DAT Drive	£875.00
44Mb Syquest Cartridge	£45.00
88Mb Syquest Cartridge	£55.00
200Mb Syquest Cartridge	£65.00

✓Crystal Quest 2 (Britain's favourite game) ... £22.00
✓Crystal Crazy (sequel to Britain's favourite game) ... £34.00
✓Deliverance (hack and slash) ... £29.00
✓Lemmings/Oh No! More Lemmings Bundle ... £22.00
➢Marathon (prepare to meet thy "Doom") ... £39.00
✓Prince of Persia II (more and better, can you resist?) ... £29.00
➢Sensory Overload ("Doom" for the Mac) ... £35.00
✓Theme Park (create the best theme park ever!) ... £34.00

SIMULATIONS
✓Civilisation (create your own) ... £29.00
➢Chuck Yeager's Air Combat (fly with Chuck) ... £34.00
✓Crystal Calibur (classic pinball game) ... £32.00
➢F/A18 Hornet (from the creators of Hellcats) ... £49.00
➢Flying Nightmares (strategy and flight sim in one) ... £22.00
✓Ferrari GP, Fokker Triplane, P51 Mustang Bundle ... £29.00
➢Best Sellers (Hellcats, Tetris, Spectre Bundle) ... £32.00
➢Hellcats Mission Disk (8 more missions) ... £25.00
➢Korean Crisis (mission disk for F/A18) ... £25.00
✓Microsoft Flight Simulator (serious, realistic, accurate) ... £35.00
➢Out of the Sun (dogfight in three WWII battles) ... £22.00
➢Pathways into Darkness (kill the evil maze monsters) ... £39.00
✓PGA Golf II (far and away the best Golf game) ... £29.00
✓Links Pro Golf (so realistic you'll think you're there!) ... £34.00
✓Populous II (want to play God?) ... £29.00
✓Powermonger (can you rule the world?) ... £29.00
✓Sim City 2000 (design and run your own city) ... £29.00
✓Syndicate/Populous I (control the world) ... £34.00
✓Sim Classics (Sim Life, Ant and City in one bundle) ... £29.00
✓Theme Park (create the best theme park ever!) ... £34.00

ADVENTURES
✓Battle of Britain (what can one say) ... £37.00
✓Lost Treasures of Infocom (bargain bundle of adventures) ... £22.00

BOARD/CARD GAMES
✓Battle Chess (animated and powerful game) ... £25.00
✓Bridge (from novice to advanced playing levels) ... £24.00
✓Chess Champion (best Chess game) ... £25.00
✓Eric's Ultimate Solitaire (a dozen patience games) ... £35.00
✓Power Poker (dozens of games) ... £29.00
✓Shanghai II (great graphics, addictive brain teaser) ... £17.00
KEY ✓ works on most Macs, ➢ Colour Macs only. Please check whether your chosen game is compatible with your Mac when ordering.

BOOKS & TRAINING

Top 20 best-selling books

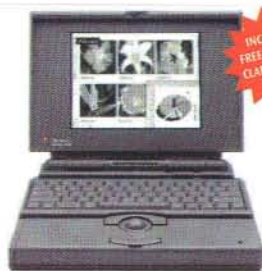
1. Little Mac Book ... £14.99
2. Photoshop Workbook ... £31.61
3. Macworld Photoshop Bible ... £26.99
4. The Macintosh Bible 5th Ed ... £34.99
5. The Quark Xpress Book ... £24.99
6. The Tao of Applescript ... £23.35
7. Design Essentials Illustrator/Photoshop ... £29.95
8. Using FileMaker Pro 2.0 ... £25.95
9. Mac Internet Tour Guide ... £26.40
10. Macworld Mac Secrets ... £36.99
11. Using Word 6.0 for the Mac ... £24.95
12. Resedit 2 Complete ... £28.95
13. PageMaker 5.0 for the Mac ... £22.95
14. The Mac is not a Typewriter ... £9.99
15. Complete HyperCard 2.2 3rd Ed ... £32.50
16. Using ClarisWorks ... £20.95
17. Macworld Networking Handbook ... £26.99
18. Macintosh C Programming Primer Volume II ... £22.95
19. Inside Macintosh ... from £19.25
20. Macworld Guide To System 7.1 ... £22.95

TRAINING
Personal Training ... 4 to 6 modules per app, each module £49.00 (audio cassette application training for:
New Mac Users: System 7.0, PageMaker 5.0, Xpress 3.3, Microsoft Works, Word 5.0, Excel 5.0, Persuasion, Illustrator, FreeHand, FileMaker and Claris Works)

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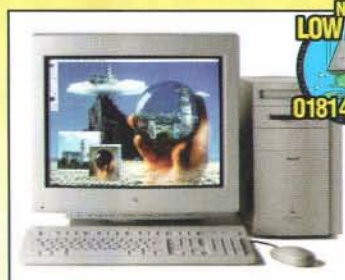
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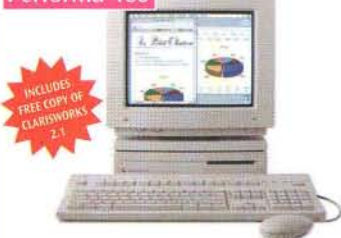
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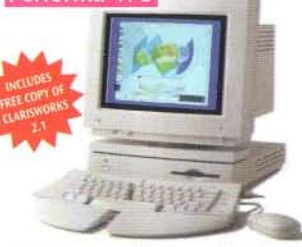
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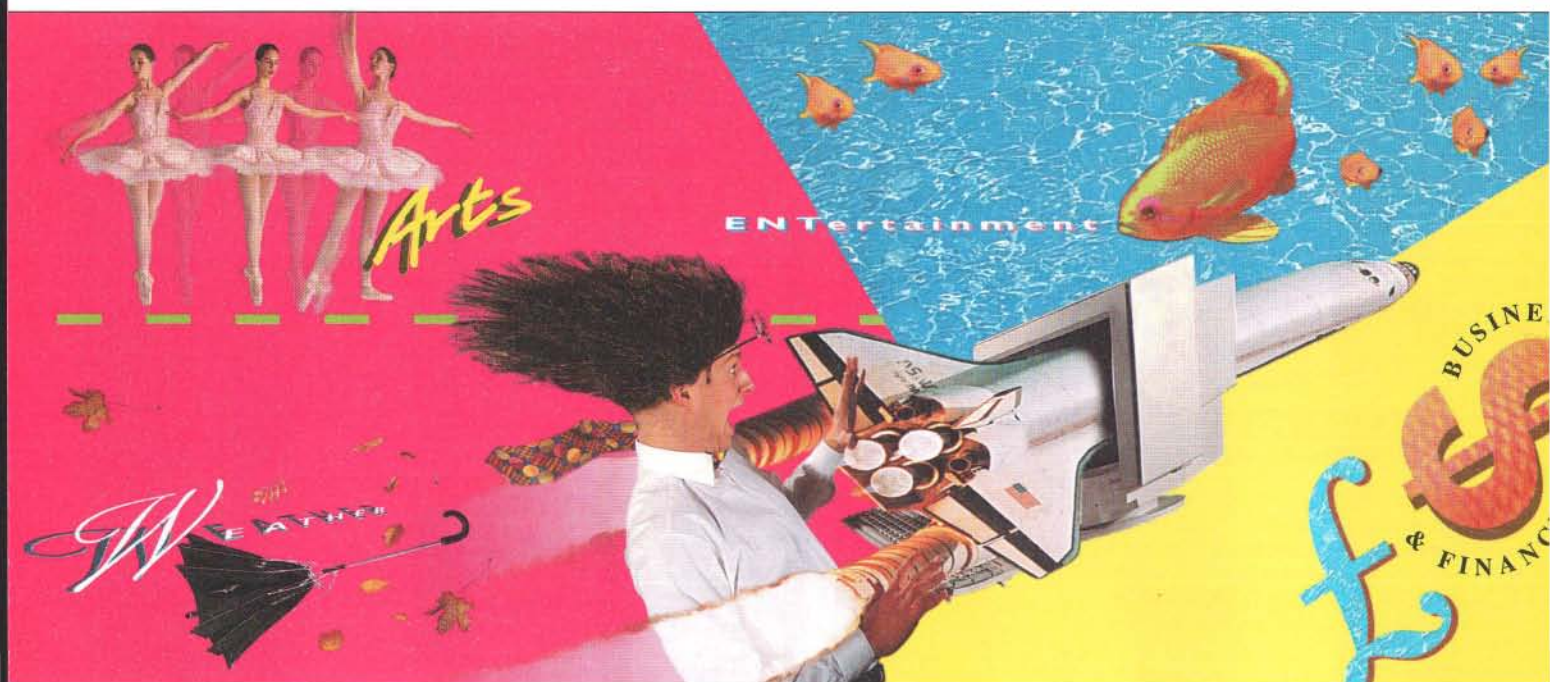
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REVIEWS

- **Word Processor:** Microsoft Word 6.0
- **Communications:** GeoPort Telecom Adapter
- **Graphics:** TextureScape 1.5; PlateMaker
- **Hardware:** Photo Engine; Wacom ArtPad; MultiSpin 4Xe
- **Business:** ClarisWorks 3.0
- **Utility:** SAM 4.0; Norton DiskDoubler Pro 1.1
- **Design:** Pixar Typestry 2.1
- **Presentation:** Microsoft PowerPoint 4.0

★★★★ Excellent

★★★★ Very good

★★★ Good

★★ Average

★ Poor

Word Processor



Microsoft Word 6.0

Publisher: Microsoft (01734 270000)

List price: £222.30

Pros: Dazzling array of new features; many interface improvements; works identically to Windows version.

Cons: Slow; can't use ruler to adjust tabs and margins with their dialogue boxes open; dual-platform manual makes finding Mac-specific information difficult.

Macworld rating: ★★★

The latest version of the Macintosh world's most popular word processor has been out for several months now. It's been lynched on-line and at user groups, it's been "thrown" into the Trash and returned to dealers, and it's lost market share to WordPerfect, previously a relatively minor player among high-end Mac word processors.

What happened? Three things: First, Microsoft made Word's interface identical to that of Word 6.0 for Windows, and the differences annoyed many 5.1 loyalists. Second, Microsoft included such a huge array of add-on utilities, document templates and gimmicky auto-formatting Wizards that a full installation of Word 6 swallows 25MB of hard disk space. Third, and most significant, Microsoft shipped a program that is often dramatically slower than its predecessor – so much so that it doesn't run acceptably on 68030-based Macs, or even on slower 040 Macs such as the Quadra 610.

Some of Word's reported performance problems are genuine, but much of the criticism levelled against the program has been a bit overblown. There are flashes of brilliance, and the new cross-platform compatibility is a boon to businesses that mix Macs with Windows. But before you upgrade, weigh up Word's innovations against its greed for hard disk space and horsepower.

A fancy facelift

Word 6 sports an entirely new look and feel, featuring a multitude of tool bars and attractive 3-D dialogue boxes, many of which display previews as you select formatting options (see "The Latest Word"). I'm not a big tool-bar fan – when I'm writing, my hands spend far more time on the keyboard than on the mouse. Fortunately, you can hide all the tool bars or show only those that you use. You can create your own tool bars, which you can also turn into floating palettes.

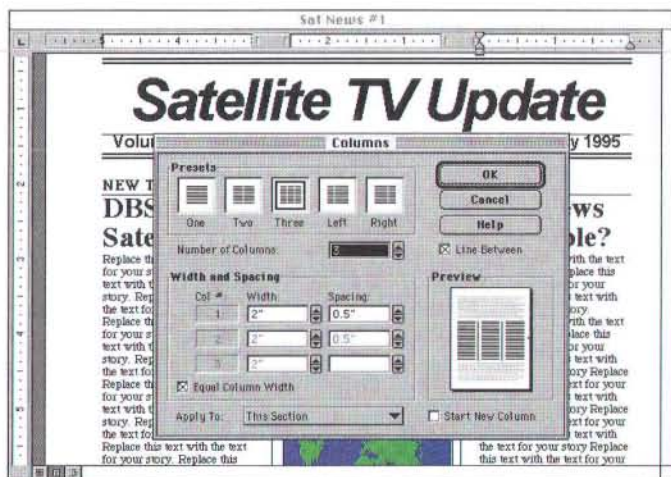
Word 6 joins WordPerfect and Claris's MacWrite Pro in providing zoom features that let you magnify or shrink a document while still being able to edit it. You can also edit a document and adjust ruler settings in Word 6's greatly enhanced Print Preview window – something WordPerfect doesn't allow.

Word 6's ruler is a good example of the good news/bad news changes that Microsoft has made. Adjusting column widths is much easier than in Word 5.1. Also, a new vertical ruler appears when you're in page-layout view and lets you adjust top and bottom margins. And best of all, if you press the option key while dragging any ruler or tab marker, Word displays precise numeric measurements in the ruler itself. That's useful because Word 6, unlike its predecessor, doesn't let you adjust the ruler's tab or margin markers while the Paragraph or Tabs dialogue boxes are open.

Word has always been a shortcut-lover's paradise, and the tradition continues. New, context-sensitive shortcut menus appear when you click on something while pressing the control key. You can rearrange the menus and redefine Word's keyboard shortcuts. And there's a new, powerful macro language, WordBasic, for automating repetitive tasks and creating custom dialogue boxes.

Features, Features, Features

Word 6 provides dozens of typing, editing and formatting enhancements. The AutoCorrect feature fixes



common typos as you type; it's also a great way to store and recall often-used text, as is the AutoText feature, which replaces Word 5.1's clumsy Glossary command. The Smart Cut and Paste feature makes sure you don't have too many or too few word spaces when you move text around. You can drag and drop text or graphics from one document window to another. You can format a word without first selecting it: just put the blinking insertion point anywhere within it. You can set up style sheets that work on a character level instead of the paragraph-level styles Word 5 was limited to. You can undo and redo up to 100 actions and create electronic bookmarks that let you navigate large documents easily.

For heavy-duty document processing, Word 6 sports automatic numbering, captioning and cross-referencing features that streamline the process of adding figures and referring to them in the text. Word's table-of-contents and index features offer more formatting options than do other word processors. As a tool for producing the likes of books and manuals, Word 6 compares favourably with technical publishing programs such as Frame Technology's FrameMaker.

For workgroup projects, Word provides an amazing new revision-tracking feature that lets editors

continues page 44

The Latest Word

Word 6 provides customizable tool bars and flashy dialogue boxes that provide preview options. Also visible here are the improved rulers; note the vertical ruler, which appears in page-layout view.

modify a document while retaining its original contents. You can then step through each revision and decide whether to incorporate it or restore the original text. The annotations feature, for attaching typed or spoken comments to a document, is also easier to use and more powerful than its Word 5 counterpart.

Word 6's table editor is light-years ahead of Word 5's. You can adjust column widths by dragging column boundaries, add borders and shading using the new Borders tool bar, and even create spreadsheet-like formulae that calculate the values in a table. There's also a built-in forms feature that lets you set up FileMaker Pro-like data-entry forms, complete with pop-up menus and buttons.

Word 6's macro and customizing features go well beyond any competing program's. You can work with macros on a simple level – recording tasks as you perform them and then playing them back later – or you can dive into Word's macro language, WordBasic, to create macros that exchange data with other programs,

display customized dialogue boxes and then perform actions depending on your responses, and execute AppleScript scripts. In the customizing vein, you can add and remove not only menu commands, but entire menus. Macros and custom menus are stored in template documents. By combining macros with Word's menu malleability, a corporate programmer or consultant can create a customized word processing application containing only those commands needed to perform a specific task, such as completing insurance claim forms or customizing a business contract.

Performance problems

What price do you pay for all this power? Time. Word 6 feels less responsive than WordPerfect 3.1, even though my tests show Word 6 to be faster at scrolling, searching and replacing, and at switching from a one-column format to three columns.

Word 6 is slowest at launching, taking nearly 30 seconds to start up on my Quadra 840AV. Word 5.1 and WordPerfect 3.1 launch in

about 10 seconds. On my PowerBook 170, Word 6 takes nearly a minute to launch. The program's View menu is unusually sluggish, often taking a second or two to appear after you click on its title.

Word 6's Word Count command appears to be snail-like, but in a way it's faster than Word 5.1's. Unlike Word 5.1 and WordPerfect 3.1, Word 6 displays an approximate word count instantly, and then proceeds to count every word to arrive at an exact count. It's this second phase that takes forever.

The last word

But what constitutes good performance: how quickly a program launches or how quickly it lets you finish your work? If you can benefit from Word's laundry list of new automation features – cross-referencing, AutoText, automatic numbering and renumbering, macros – you stand a good chance of saving more time over the course of a day than you'll lose waiting for Word to start up. If your needs are more basic – like using a word processor to, say, write letters – forget Word 6 and WordPerfect and get ClarisWorks or SoftKey International's WriteNow.

But if you can put Word 6's features to work, and if you have a Quadra 650 or faster Mac, then take the plunge. But be sure to use the Custom Install option to pare down the program's disk-space requirements. If you have a slower 68040 Mac, think twice. And if you have a 68030 Mac, then perhaps you should think "WordPerfect". – **Jim Heid**

Five ways to speed up Word 6

- Hide all tool bars, the status bar and the ruler. This dramatically decreases the time required to start Word.
- Don't let a floating tool bar overlap the document window. This slows scrolling significantly.
- In page-view mode, hide the rulers if you aren't using them. This speeds scrolling.
- Give Word more memory. If you have 8MB or more of memory, use the Finder's Get Info command to boost Word's allocation to at least 3,000K.
- Fine-tune Word's advanced settings. You can make a big difference in Word 6's performance by tweaking the way it uses memory. For details, you'll need a copy of a Microsoft technical note called "Mac Word 6.0 FastTip: Setup & Performance Optimization". I've posted a copy in the Macworld Online forums on America Online and eWorld.

Fax Modem/Software



GeoPort Telecom Adapter

Manufacturer: Apple Computer
(0181 569 1199)

List price: £95

Pros: Simple GeoPort connection; low-cost 14,400bps modem and 9600bps fax (for AV Macs only).

Cons: Dreadful fax software; few third-party fax software products support GeoPort interface.

Macworld rating:

Modem: ★★★★★

Software: ★

There has been much talk in the past year of how Apple will eventually shift its Mac-making operations onto third-party clone manufacturers and metamorphose into a software company, with Macintosh system software supplemented by core products covering major application areas.

Well, if the GeoPort fax software is a measure by which to judge its possible future success, Apple will certainly be doomed as a software company. While other comms software specialists have produced decent all-round fax products at reasonable prices, Apple has come up with Express Fax, which, even though very cheap (and bundled free of charge with the hardware in the GeoPort Telecom Adapter pack), is most definitely an embarrassingly bad piece of software.

Tacky fax

Express Fax is, on the face of things, a fairly comprehensive fax application. It can send and receive, allows you to add a cover sheet to each message and works in harmony with almost every Mac application, neatly replacing the Page Setup and Print commands with their fax equivalents when you hold down the Shift and Ctrl keys.

But when you get beyond the upbeat manual and try to actually use the software, it soon becomes obvious how little Express Fax is in tune with everyday fax requirements. For example, it's impossible to combine pages from more than one file in a single fax transmission; the cover page only allows you to type a message of 256 characters to the fax recipient; the software doesn't put page

continues page 47

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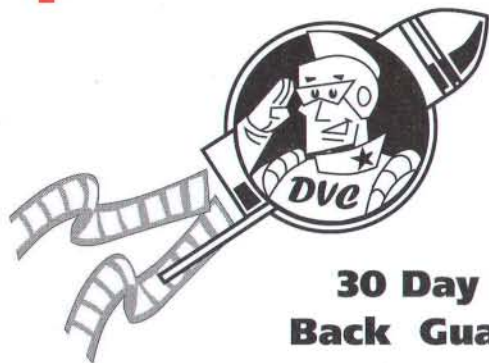


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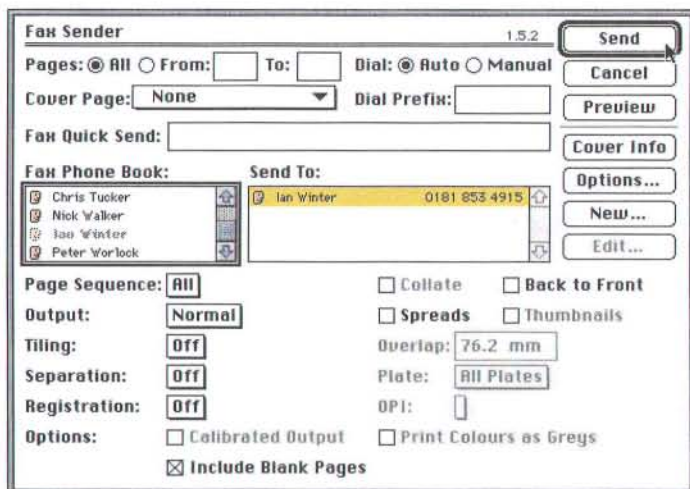
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numbers or the sender's ID anywhere but the cover page; in QuarkXPress it doesn't convert coloured blocks to greyscale, but makes them black instead – black text on a yellow block just comes out as a black block – and the software is terrible at digitising some page elements. It's fine for text and bitmap images such as PICT or TIFF files, but if you have place an EPS image in XPress or PageMaker then it digitises the rough bitmap preview rather than the full EPS information.

Added to this is the fact that it crashes regularly, which is amazing given that it is only designed to run on AV Macintoshes – it should be bombproof on such a limited spread of platforms – and that it has some really dopey cover-page software that only works – and then fitfully – when the Mac's caches are switched off and Extensions disabled, and you have fax software that is barely worth using.



Fax facts

The QuarkXPress Print dialogue box is modified for faxing when Express Fax is selected. Here, you can select a cover page design, click on Cover Info to fill in the cover page details and create a list of recipients. The bottom half of the dialogue box is all XPress-related and so will change according to the application in use. When you have clicked on the Send button, the Fax Terminal application starts up.

After several weeks of tests, the only thing for which I now use Express Fax is sending text-only or text-and-photo messages. Everything else, including the countless times when I need to mix documents in a fax transmission, is better off sent through a conventional fax machine, where I know the PostScript printer will get a decent original.

Modem à la mode

The dire quality of Express Fax is a shame, given the neat hardware with which it is bundled. The GeoPort Telecom Adapter is the piece of hardware you need to make use of the AV Mac's DSP chip for

telecommunications. The DSP and GeoPort circuitry inside the Mac deal with the modem communications and the adapter is there simply to make the link between the Mac and the outside world.

With the adapter installed, the software gives you a new control panel called Express modem, through which you can turn the modem on and off, determine whether it will accept incoming calls and see at any time what the modem is doing.

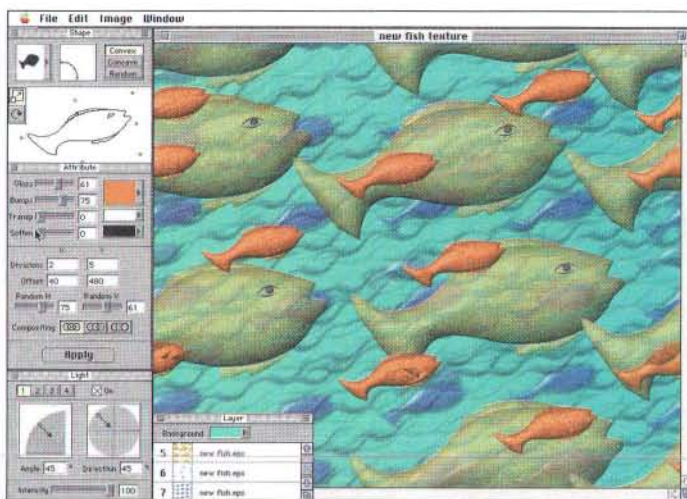
All your regular communications programs can make use of the modem by simply switching their modem choice to the Express Modem, which becomes available as a Communications Toolbox item.

With that done, you have a 14,400bps, error-correcting, Hayes-compatible modem ideal for connecting to CompuServe, eWorld (although eWorld only allows 9600bps access) or any other on-line service, or to other Macs with

Apple Remote Access, Timbuktu Remote or equivalent.

The only problem experienced with the Express Modem was when connecting to a particular videotext service, where we consistently failed to get a connection and put it down to the fact that the Express Modem continues to send out a regular fax-machine polling beep and this wrecked the videotext handshaking.

But on the whole, AV Mac users should be well-satisfied with the Express Modem. It's just annoying that with the awkward programming interface for the GeoPort, only Apple's software can use the Express modem for faxing, and it's an absolute hound. – Ian Winter



Variations on a theme

By changing the parameters in the dialogue boxes, you can create an infinite number of patterns from a few basic shapes.

Texture Generator



TextureScape 1.5

Publisher: Specular International

Distributor: Gomark (0171 731 7930)

List price: £132

Pros: Resolution independent; automatically arranges patterns for seamless repeatability; space-efficient file format.

Cons: None.

Macworld rating: ★★★★★



TextureScape is a new type of algorithmic art program that takes PostScript shapes and creates seamlessly repeating patterns.

Version 1.5 is Power Mac native. (Upgrades from version 1.0 cost £16.)

To begin a TextureScape pattern, you first draw a simple shape in a PostScript draw program, such as Adobe Illustrator. Import the shape into TextureScape and resize, rotate or scale it, using as many shapes as you like to create a pattern. Each shape is in its own layer: you manipulate them separately.

TextureScape is far more sophisticated than a simple desktop-pattern maker that produces rigid, uninteresting designs. The basic building block of your pattern is a repeating cell within which you can set a value for the number of times each shape repeats vertically and horizontally. You can also set separate horizontal and vertical values to determine how random the placement of the shapes will be.

Together, these features produce patterns of complex and subtle symmetry. Remarkably, no matter what settings you use, TextureScape can repeat the pattern endlessly without discontinuities, or seams.

Pseudo-3-D features add depth – you can specify a bevel style for any shape, and determine whether the object appears convex or concave (and even mix things up by having the object vary randomly from convex to concave). You determine the placement and angle of lights in relation to objects, and set the degree of gloss for any object.

TextureScape offers controls that allow you to create subtle, amorphous shapes and shadows. By adjusting Bumps (which produce an airbrushed look), Transparency and Softness, you can simulate anything from clouds to sponge daubs.

The Last Word

TextureScape's ability to create repeatable patterns makes it perfect for 3-D artists who want to create seamless texture maps. The program can generate very large bitmaps from very small PostScript files – useful for print designers.

Although you can use TextureScape to produce realistic surface textures, such as wood or stone, don't throw away your scanned-texture CD-ROM just yet. Designing anything that looks convincing takes considerable trial and error.

The ideal algorithmic art tool should be simple enough to be fun but flexible enough to give you meaningful control. By this standard, TextureScape is a success. With it, artists and non-artists alike can share the exhilarating experience of creating pictures that look like what you had in mind, only better.

– Joe Matazzoni

Photoshop accelerator



Photo Engine

Manufacturer: Radius
Distributor: Computers Unlimited
 (0181 200 8282)
List price: £1,099
Pros: Accelerates 25 Photoshop operations; dramatically improves performance on a Power Mac; adds no new commands to Photoshop's menus.
Cons: Does not accelerate JPEG compression.
Macworld rating: ★★★★★



Radius's Photo Engine NuBus board is the first DSP hardware to accelerate Adobe Photoshop 3.0 on both 680X0 and Power Macs. Although the latter spells the end of boards with only two DSP chips – such boards slow down many Photoshop operations on a Power Mac – the Photo Engine's four 66MHz 32-bit DSP chips offers sufficient processing power to speed up some Photoshop functions on even sophisticated Mac systems.

The Photo Engine accelerates 25 Photoshop operations, including sharpening, blurring, resampling and rotating. The board also speeds up infrequently used filters such as Emboss, High Pass and Custom. In CMYK mode, it speeds up conversion and display operations (much as Radius's Thunder II GX series of graphics card do). However, CMYK acceleration occurs only on 680X0 Macs and when Photoshop is set to the more accurate Smoother mode.

Memory and image size

Like any DSP board, the Photo Engine relies on an uninterrupted data

stream for its acceleration. This means that you achieve the most dramatic speed enhancements when an image fits entirely in RAM. With insufficient memory, Photoshop has to swap chunks of the image out to disk; the DSP board can accelerate only those operations that occur between disk swaps. To keep disk swapping to an absolute minimum, Photoshop needs an amount of RAM equal to three times the size of the image plus an extra 8MB or so for the program code itself.

I compared the speeds of three operations – Unsharp Mask, Gaussian Blur and Resampling – on a series of differently sized images when Photoshop was assigned 16MB and 64MB of RAM. The largest image, 15MB, did not fit in RAM when Photoshop was assigned only 16MB of RAM, but it had room to spare when Photoshop was assigned 64MB. Therefore, the speed enhancements were greater at the higher RAM setting.

When RAM is limited, the Photo Engine offers better speed increases as image size decreases, since a smaller image is more likely to fit in RAM. When plenty of RAM is available, the speed increases go down as the image size decreases. When Photoshop was assigned 64MB of RAM, the Photo Engine accelerated Unsharp Mask applied to the 4.75MB image by a factor of 3.00. That's an improvement, but it's less saving than the 3.62-fold increase for the 15MB image.

The board's inherent strengths also account for the relative lack of speed improvement in the Resampling tests. Unlike filters that depend on adjustable radius values, resampling relies on a fixed, relatively small radius, so stressing the importance of data transfers, which run at fixed speeds. As a result, the Photo Engine responds to increased RAM more than it does to image size. The same is true for rotating, feathering, single-

shot sharpening and blurring, and even the Custom filter.

For 680X0 Macs, the Photo Engine's speed savings are more dramatic than those shown in my tests. Given sufficient RAM, the board may accelerate Unsharp Mask and Gaussian Blur by as much as tenfold. This makes the Photo Engine a good buy for anyone who plans to upgrade to a Power Mac and wants to transfer the DSP board.

DSP and Static RAM

The Photo Engine derives its speed gains not only from the DSP chips, but also from 128K of look-ahead static RAM included on the board. The RAM allows the Photo Engine to simultaneously load and process data, so maximizing the potential of the DSP chips as they don't rely on data-transfer rate. At the present time, no other DSP board comes with static RAM – yet another reason the Photo Engine can accelerate operations on the Power Mac that other boards can't.

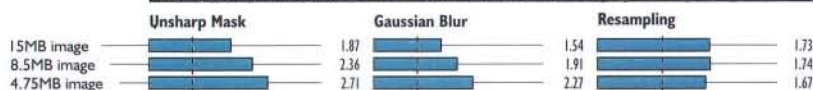
Like most DSP manufacturers, Radius has rewritten some Photoshop code to make it more efficient. Even so, the code remains functionally identical to Photoshop's, earning the Photo Engine the Adobe Charged seal of approval. As with all such products, you choose the same commands you've been using all along. An option lets you display a green dot in the menu bar whenever the DSP chips are engaged.

My one minor complaint with the Photo Engine board is that it doesn't accelerate opening and saving operations. While it does speed up generation of preview icons, it doesn't boost JPEG compression or decompression speeds, a standard function of the old 16-bit DSP boards. Nor does the Photo Engine accelerate QuickTime JPEG compression applied to PICT files, or LZW compression applied to TIFF files.

Photo Engine's Speed Boosts

Times as fast as Photoshop without the Photo Engine. Longer bars are better. Dashed line indicates the speed of Photoshop without the Photo Engine.

WITH A 16MB RAM PARTITION ASSIGNED TO PHOTOSHOP



WITH A 64MB RAM PARTITION ASSIGNED TO PHOTOSHOP



All tests conducted on a Power Mac 7100/66AV. Settings for each test were Unsharp Mask at 200 percent and 10.0 radius; Gaussian Blur at 3.0 radius; Resampling to 75 percent.

The Last Word

While the Photo Engine is currently the best DSP hardware around, you should consider buying it only after the rest of your system is up to speed. The best way to accelerate Photoshop is with lots of RAM and a speedy hard drive. If you invest in a new machine, a Power Mac offers perhaps the most significant degree of acceleration. These solutions offer the advantage of accelerating all of your software, not just Photoshop. Once you have this equipment in place, you can achieve additional speed by purchasing the Photo Engine board. – **Deke McClelland**



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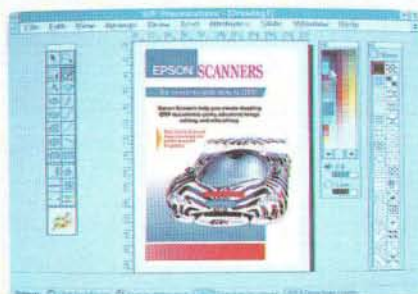
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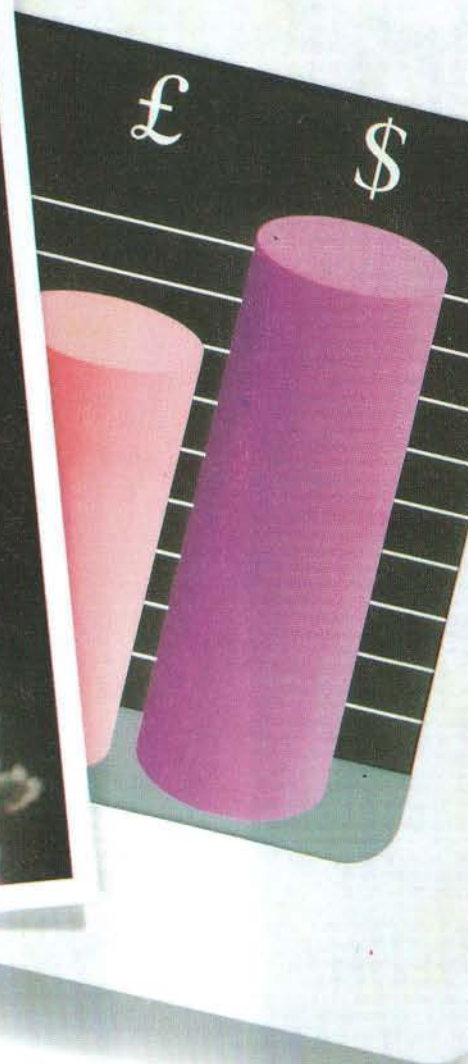
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ClarisWorks 3.0

Publisher: Claris (0181 756 0101)

List price: £129

Pros: Good implementation of intelligent Assistants; still fast and friendly for users with older Macs.

Cons: Largely unchanged since previous version; dim-witted word-count feature.

Macworld rating: ★★★★★



ClarisWorks is the best-selling integrated software package for the Mac, and with good reason:

it's inexpensive, easy to use, surprisingly powerful and a frugal user of system resources such as RAM and hard disk space. This last quality makes it especially attractive for people with Macs that aren't quite on the cutting edge, such as older 68030-, 68020-, and even 68000-based models. ClarisWorks 3.0 adds a few new features but mainly sticks to the well-worn trail blazed by ClarisWorks 2.1. The program still has the same six environments: word processing, drawing, database, spreadsheet, communications and a 24-bit painting module. As with previous versions, integration between the different environments is quite excellent.

Like ClarisWorks 2.1, version 3.0 runs on 680X0 Macs and in native mode on Power Macintoshes. But because ClarisWorks is such a responsive program, it really doesn't benefit much, if at all, from the extra speed of the PowerPC processor. I found virtually no difference in the apparent speed of the program when running on a 68040 Mac or a Power Mac.

The Real News

For its main new features, ClarisWorks 3.0 offers eight Assistants which help users create new, formatted documents and make it easier to add complex elements, such as tables or footnotes, to a document. Assistants step you through a process by asking a series of questions via several dialogue boxes, then create a document based on your answers. There are Assistants for creating tables, footnotes and envelopes in the word processor; calendars using the spreadsheet; newsletters and presentations in the draw environment; and address lists in the database. A Find

Assistant helps you locate ClarisWorks documents that contain a particular word or date.

Assistants are reminiscent of the Wizards found in most of the current Microsoft programs, such as Works 4.0, but with a key difference: Wizards only help you make new documents, whereas Assistants can help you add to existing documents. I found the Assistants quite useful, especially the ones for table creation and for creating the database address list, which saved lots of drudgery by creating and formatting fields for me. Another nice thing about the Assistant technology is that it is extensible, so you can add new Assistants just by copying them to the Claris folder on your hard disk. Claris expects to produce new ones in the future and is also pushing third parties to write Assistants.

Minor Additions

The program finally has a word-count feature, which can count characters, words, lines, paragraphs and pages. That's fine, except that it only gives you this information for an entire document. Apparently, it didn't occur to the ClarisWorks team that users might want a word count for a block of selected text. Even when creating a newsletter in the drawing environment, you can't get a word count for one block of selected text. This is an inexcusable oversight.

Another change to ClarisWorks affects Windows users more than Macintosh users. ClarisWorks 3.0 has been released for both platforms simultaneously, and the Windows version now has all the functionality of the Mac version. Claris says that files for the two versions are now binary-compatible, which means no translation is necessary when transferring ClarisWorks 3.0 files from Windows to the Mac or vice versa. For companies that use ClarisWorks on both platforms, this could result in time savings. I did not test cross-platform compatibility, however.

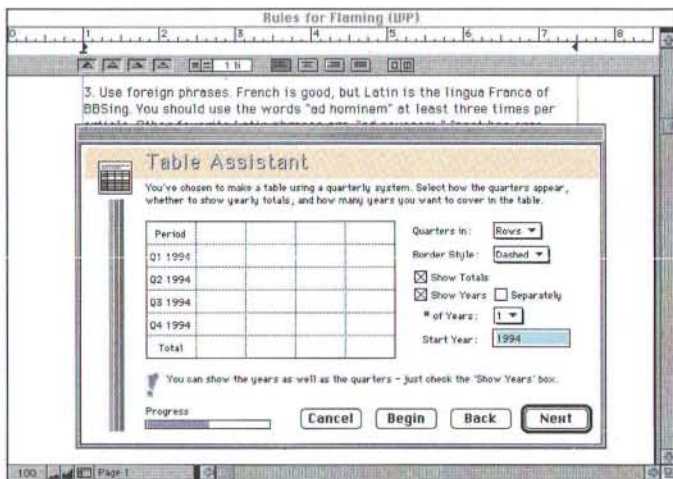
Normally, a product changes significantly with a major version-number upgrade. That is not the case with this revision of ClarisWorks. The Assistants, word-count feature, cross-platform file compatibility and import filter for MacWrite Pro are the most notable changes. Claris has also included 75 clip art images, 7 Monotype fonts (primarily for Windows compatibility, but they're useful on the Mac, too), and a new walk-through tour of the program. And version 3.0 lets you (with System 7.5) drag and drop clip art

from the Finder to a ClarisWorks document.

Missed Opportunities

In choosing not to substantively revise the program, Claris missed the chance to improve some of ClarisWorks' shortcomings. In the word processing environment, you still can't have an outline and regular text in the same document; you must be in one mode or the other. And there's still no Expand All command in the outliner. You can set up and name character styles but not paragraph styles, so it's not as easy as it should be to format standard documents.

It would have been nice to see some simple scripting added to the database. You might think that advanced users could add automation to the program via AppleScript, but you would be wrong. Incredibly, Claris has chosen to eliminate access to the core AppleScript support that version 2.0 had. This is especially puzzling and disappointing as several other Claris products boast excellent support for AppleScript. Also, the communications environment still doesn't come with a modern file-transfer tool, such as one with



the Zmodem protocol; you're stuck with less-efficient transfer methods like Xmodem and Kermit.

The Last Word

ClarisWorks 3.0 may be a bit disappointing because of the relative lack of new features, but that shouldn't take away from the fact that ClarisWorks is still hands-down the best integrated-software package available for the Mac. ClarisWorks is far better in terms of features, speed, integration and use of system resources than its main competitor, Microsoft Works 4.0. If you're looking for an integrated program, ClarisWorks is the one to buy.

— Tom Negrino



Assist Me

The intelligent Assistants make it easy to add complex elements to an otherwise pedestrian letter or report. Here, I'm adding a table with quarterly results to the current document.

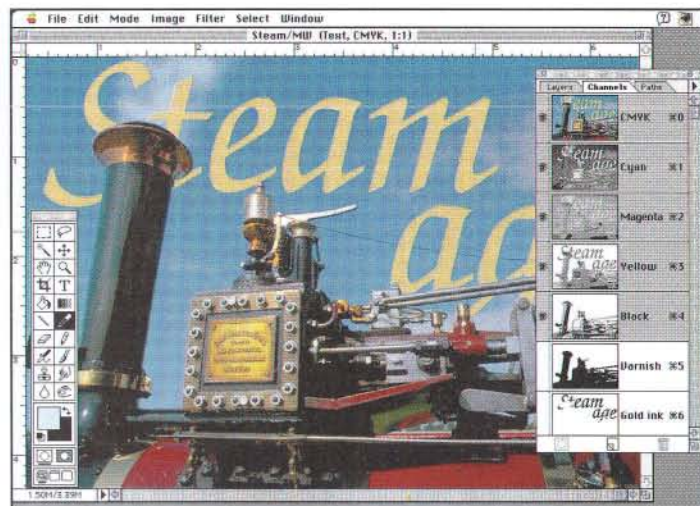
Photoshop plug-in



Publisher: In Software
Distributor: XChange International
(0171 637 2966)
List price: £295
Pros: Reasonable price for a specialised product; easy to use; good manual.
Cons: No preview in Photoshop or XPress.
Macworld rating: ★★★★★

PlateMaker is a Photoshop plug-in that lets you export special or spot colours from Photoshop into a layout program such as XPress. Normally Photoshop will only export printable files as the three screen colours (RGB) or the basic printing colours (CMYK).

Unfortunately the CMYK ink set is fairly limited in the colours it can reproduce – it won't give you metallics such as silver and gold, or bright blues, greens, reds and oranges. Pantone, whose colour definitions are widely used by designers, says that only about fifty per cent of its colour range can be reproduced from the CMYK set. It is possible to print these, however, using specially mixed inks and running these as extra plates on a printing press.



Set for action

PlateMaker is simple to use. It works with any Photoshop file with colours set to the CMYK, Indexed or Multi-channel modes. You set up your special colours as extra channels in Photoshop. If you want to print your watch in gold, create a cut-out mask of the area you want and transfer this to a new channel.

PlateMaker's short, clear manual gives tips on setting up Photoshop so the extra colours will work in print – for instance, you may have to use knockouts, overprints and trapping. It also tells you how to hack into PlateMaker with ResEdit to change the defaults.

When the job is finished, you choose the PlateMaker option in the Export menu and a new control window opens up. This gives you a comprehensive range of controls over the way you wish to output the file. You choose which channels are to be exported, and rename them to the ink colour that you want picked up in XPress (PlateMaker cannot pick up the names directly from the channels for some reason). You can define screen rulings and angles, which is important for extra colours that could otherwise cause moiré patterns. There's also a choice of single or multiple DCS files, and options for the clipping paths, preview and ASCII/Binary choice.

The file is then saved in the DCS 2.0 (Desktop Colour Separation) format, which is compatible with XPress and other layout programs. XPress has been able to import special colour names from version 3.2 onwards. It adds your special colours to its colour list and these are automatically output as additional "plates" when you print with Separations turned on. If you don't have a late version of XPress, IN Software bundles an Xtension called Plate-Check which can add the extra colours from a DCS 2.0 file to

Extra channels

Here, the Photoshop channels menu is set up to define areas that will be printed with gold ink and varnish. Normally you would knock out the image under an extra colour. However, with gold ink you need to print a yellow undercoat. The Varnish channel is set up to print a gloss coating over the complex area of the steam engine.

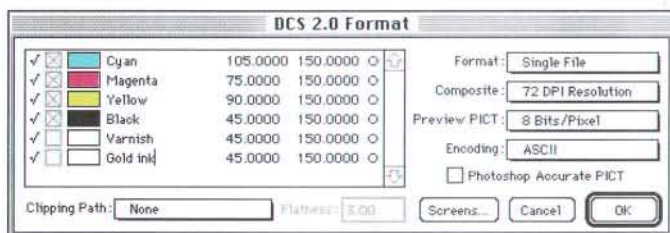
XPress' colour list. However, in both cases, XPress can't display the extra colours on-screen.

While PlateMaker makes the creation of multiple-colour DCS 2.0 files very easy, creating the additional colour channels in Photoshop is outside of its intended job – that's left to the operator. There is no previewing facility in Photoshop for additional colours, so you are largely working blind with only the monochrome channel displays and the marching ants of the "Load Channels" commands to guide you. This means that creating special colour channels in Photoshop requires a thorough, in-depth understanding of masks and channels. Fortunately working this way is made a lot easier by the layers feature of in the latest version of Photoshop.

The Last Word

PlateMaker works well as a colour exporter, but that's all it is. If you want help with creating those colours, then there is a more expensive alternative. TransCal Corporation's HiFi ColorSeps provides an on-screen preview and simulation of the new colours and, like PlateMaker, it exports the additional channels in DCS 2.0 format. However, it costs £1,000. There is talk later this year of "High Fidelity" colour separators from several companies, including Kodak, that will automatically generate six and seven colour ink sets from RGB scans.

– Simon Eccles



In the menu
This is the PlateMaker menu that opens when you choose Export/PlateMaker in Photoshop.

This is a pity, for you might want to highlight a part of a photograph in a bright or metallic colour. For instance, an advertising designer might want to emphasise the bright green sign, or show the casing of a watch in a metallic gold ink. Another common effect is called spot varnish, where a glossy, clear coating is printed over part of a photograph – for instance, a car body – to make it stand out.

While it has been technically feasible to do this with Photoshop before, it has meant messing around with two or three Photoshop image files with complex masks, and working out how to superimpose and overprint them in XPress. PlateMaker takes the grief away.

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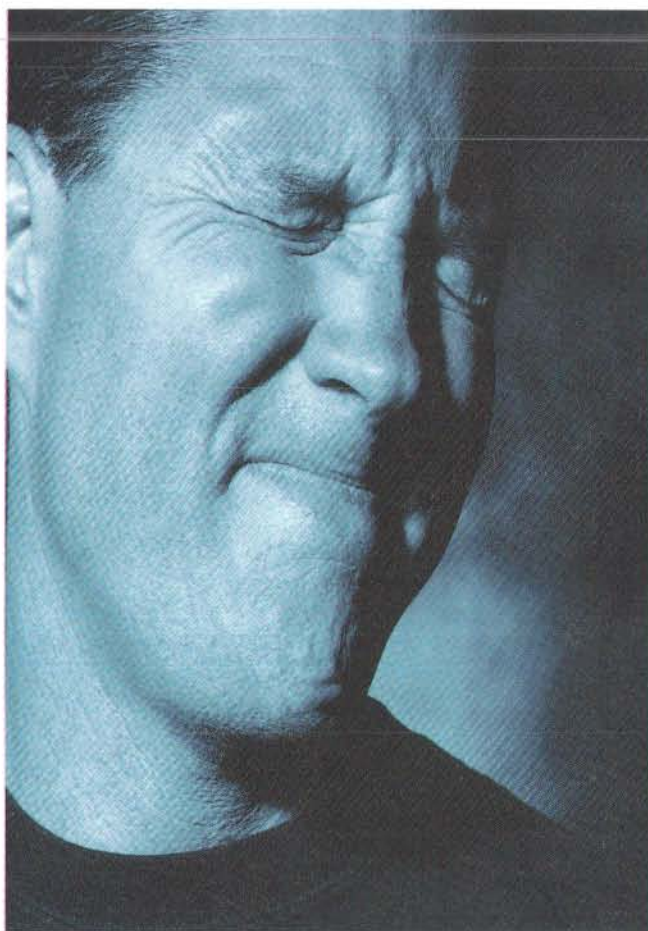
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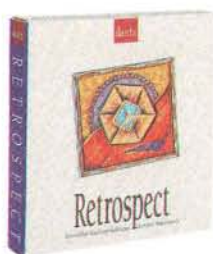
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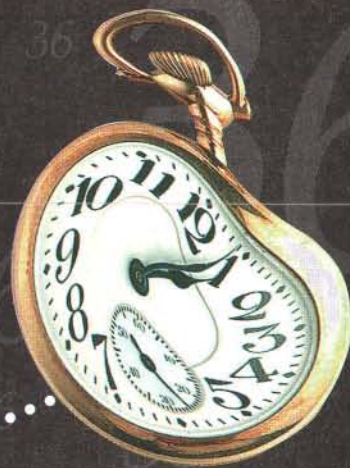
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Graphics tablet



Wacom ArtPad

Manufacturer: Wacom

Distributor: Letraset (0171 928 3411)

List price: £159 (£199 inc. Dabblers)

Pros: First drawing tablet specifically for illustrators; excellent proportions, connectivity and control software.

Cons: Still a slight lag between pen-click and on-screen response.

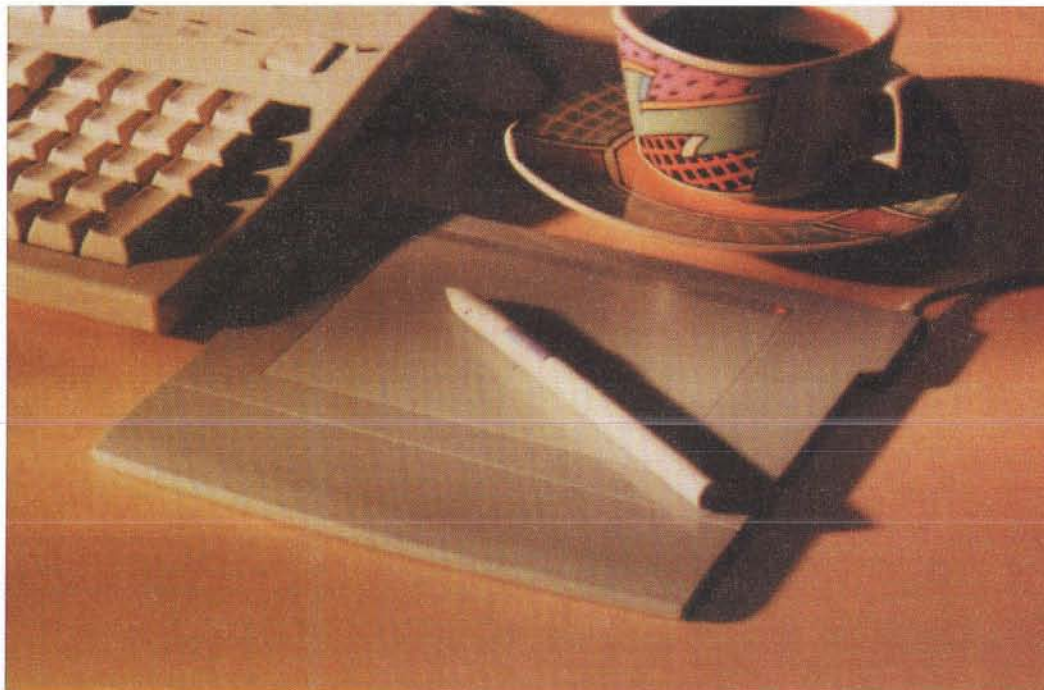
Macworld rating: ★★★★★

The problem with most drawing tablets is that they attempt to cater for a two-tier market: illustrators, who need an input device that is more sensitive than a mouse; and those who work in mapping, CAD and other structured graphic arts where a tablet is used to digitise artwork with specific dimensions.

Up until now, most tablets had tried to cater for both fields by having a moderately large area on which artwork could be digitised, and introducing increasingly refined pressure-sensitivity to give artists improved feedback. But the compromise only works against both extremes: the unwieldy size of the tablet is a constant drawback for artists – even A5 drawing areas can require you to shove aside your papers, spill coffee and send the mouse onto the floor before you get comfortable enough to draw; while the moderate tablet sizes make digitisation convenient only if you have small artwork.

One-track Mind

Wacom's ArtPad is the first drawing tablet to recognise that these two disciplines have completely individual requirements, with no crossover. It is designed purely for use by artists, and as such gives them just what



a barrel; and Wacom's most sophisticated pressure-sensitivity software yet, which lets you decide exactly how much pressure corresponds with on-screen effects, as well as save specific settings for each drawing program that you use.

The most fundamental change from earlier Wacom products is the ArtPad's physical dimensions. With a drawing area of 127mm x 95mm in a tablet of 191mm x 175mm, it is no bigger than a mouse pad – in fact, you can even use it as one. It fits easily on any desk or, more importantly for many users, in one hand for use with a PowerBook.

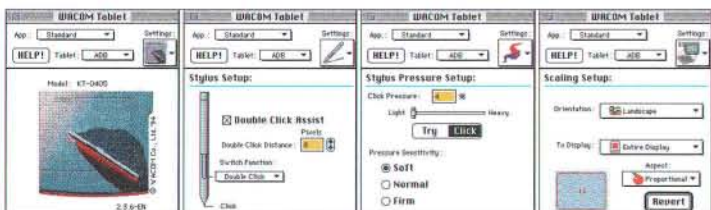
The size of the drawing area doesn't inhibit creativity, as the ArtPad's high resolution means that even small movements register on-screen. However, if you need to make a large number of very small brush strokes, there is still a short lag of a few microseconds or so between pressing and moving the UltraPen and seeing your brush stroke appear on-screen, and so it's hard to do

Another useful design feature is the ArtPad's ADB plug, which has an ADB-out socket built in. This means that you can plug the ArtPad into the side of the Apple Extended keyboard, piggyback your mouse's ADB plug onto the Wacom plug, and both devices are equally handy. This fixes the problem of having wires trailing to the back of the Mac where, on newer models, there is only one ADB socket which will already be taken by the keyboard.

Wacom makes great play of the idea that you can use the ArtPad as a mouse replacement, but this is only really true in that it is almost as compact as a mouse. While it beats the mouse hands-down for painting, it is still a little awkward when used to select and drag items in the Finder. Nevertheless, the ability to make a single press of the barrel-button into a double-click, and to turn on the Double-Click Assist feature so that the pen is allowed to shift a little during a double-click, all mean that the pen is a little less temperamental than in earlier models. But we're still some way from pen-based computing, which at one time was the Next Big Thing but now seems to command very little attention.

The Last Word

An optional extra that can be bundled with the ArtPad is Fractal Design's Dabblers software (see Macworld, July 1994). Aside from the supreme champion, Painter, this is the best pressure-sensitive painting software you can buy, and goes very well with the ArtPad, which is easily the best drawing tablet for Mac-based artists. – Ian Winter



In control, under pressure

The ArtPad's Control Panel makes it easy to set up the pressure-sensitivity you need to match your own drawing style.

they need: a small but extremely high-resolution drawing area that can be mapped to the entire screen; a very lightweight, battery-free UltraPen with a pressure-sensitive tip and

things like cross-hatching unless you're willing to work more slowly than with a pencil. Of course, with larger, sweeping brush strokes the problem doesn't come into play.

Anti-virus utility



SAM 4.0

Publisher: Symantec (01628 592222)

List price: £149

Pros: Comprehensive virus protection; improved interface.

Cons: Can be sluggish and long-winded; may cause conflicts.

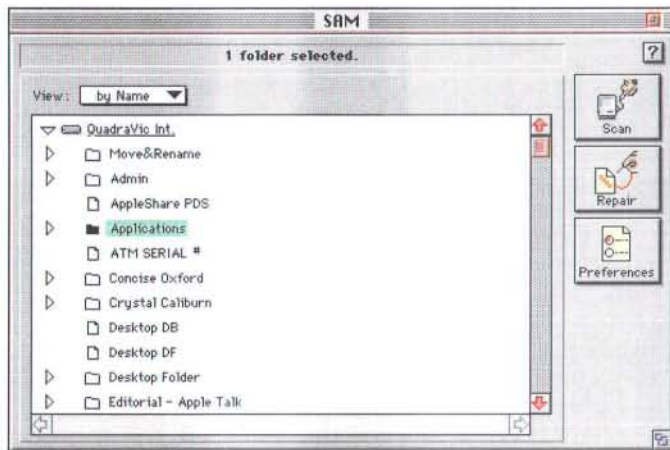
Macworld rating: ★★★★★



Computer viruses are rather like bad government: most people think it's got nothing to do with them and nobody really worries about it until it's too late. Although recently the whole issue of virus protection may have lost its shock-horror value in the media, it's still a problem that more sociable Mac users can't afford to take too lightly. If you've not come across them before, viruses are

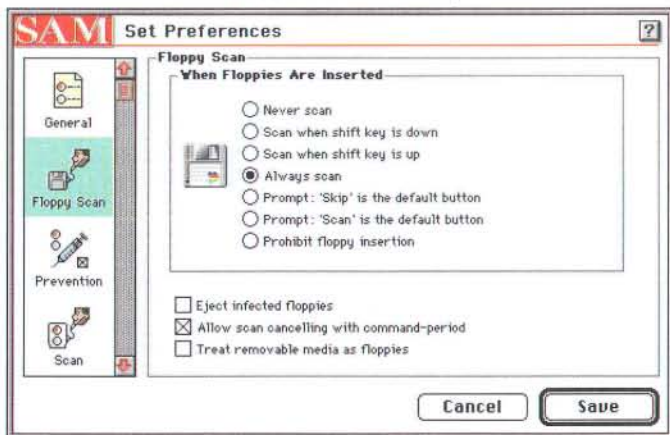
Select few

In terms of scanning, you can choose a single application, a folder or the entire hard disk.



Scan this

SAM's preferences for floppy scanning are quite comprehensive and include the ability to treat removable media as floppies.



Like their organic counterparts, computer viruses behave in a myriad of ways. Some stay active in memory until you switch off the machine, while others stay active only as long as an infected application is running. But like the majority of organic viruses, most computer viruses can be prevented and, more often than not, completely cured.

Symantec AntiVirus for Macintosh, or SAM, is a kind of cyber-shield designed to automatically lock out most known viruses and even detect new strains. If your Mac has a virus, chances are a dose of SAM will knock it out. SAM's been around since the original virus-scares of a few years back and has always offered a comprehensive solution for complete and continuous anti-viral care. Version 4.0 continues in that tradition and adds a number of new features to the mix, making it the fastest virus scanning software available for single and networked Macs and PowerMacs.

SAM requires at least a Mac Plus, System 6.0.5, 2MB of RAM and 2 MB of free disk space. The full package consists of SAM Intercept (an extension that uses about 170K of RAM), the SAM application and supporting files. If you're short on RAM, you can install an abridged version of Intercept that is less configurable but requires only 24K.

Changes

Symantec has revitalised the whole interface in SAM to allow users to configure and operate all of the program's functions from one convenient location. This means that modules such as SAM Intercept and Virus Clinic have been combined into one component and there are further enhancements to alert messages – the whole application looks and feels consistent with Macintosh, DOS and Windows interfaces.

SAM 4 offers no radical changes over its predecessor, but most users will find it to be a significant improvement. The scan engine has been accelerated and runs native on Power Macs, the interface has been modified, and the program can download new virus definition files from a BBS run by Symantec.

SAM works in the background and essentially protects against viruses in three ways. The main Intercept extension is aware of the characteristics of all known Mac viruses and checks for their presence when files are opened. SAM can also track the state of your applications and warn you if any have "changed" since a change may be an indication of infection. Finally, the extension

can monitor what's happening on your Mac and warn you if a program is taking an action characteristic of virus infection. This can possibly provide protection against a new or unknown virus and, in many ways, is SAM's most valuable feature. The only annoying thing about it is that many activities characteristic of virus infection are also performed for legitimate reasons by a wide range of popular applications. You can, however, toggle Intercept's capabilities on and off so if you don't want to be warned about some particular activity, you can switch the warning off or tell SAM to remember that a particular activity is alright.

SAM now has a much simpler interface – it's easier to control what the Intercept extension will and won't check. You also use it to scan individual files or entire disks for potential infection and in some cases, repair an infection you've found. You can also schedule scans to run automatically at a preset time and SAM will even look for viruses inside files compressed by popular Mac compression products such as Stuffit or Compact Pro. The application can be used to update SAM's virus definitions by dialling into Symantec's BBS at regular intervals to see if there's anything new or if the definitions have changed. The idea is that SAM will automatically download and install them for you for the price of the telephone call.

SAM is configurable enough to strike a comfortable balance between protection and convenience. Although the fullest protection slows down program launches, and scanning compressed files on a large hard disk can take over an hour, full scans can be scheduled for times when your Mac is idle, so providing considerable protection with minimum delays. As with any extension, Intercept may conflict with some software: you may have to spend a bit of time experimenting if your system starts acting up. As with Norton Utilities 3.1 and Norton DiskDoubler Pro, Symantec has enhanced SAM 4 to support Power Mac native. SAM Administrator is also available for centralised distribution and management across networks.

The Last Word

If you're a solo user, only buy shrink-wrap software and never exchange floppies with anyone else for any reason whatsoever, then you probably don't need SAM 4.0. But if you and your Mac indulge in more sociable behaviour, then, as with sex, it's probably worth taking precautions. – Michael Prochak



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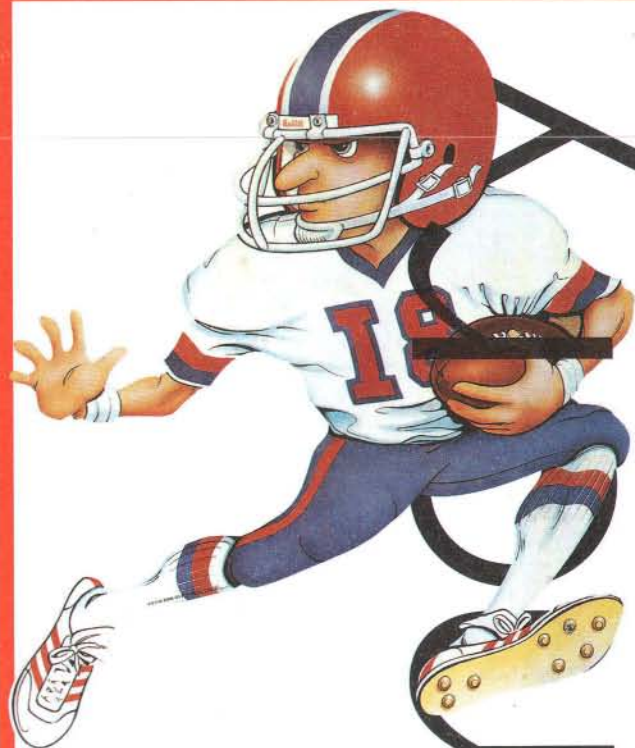
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CD-ROM drive



MultiSpin 4Xe

Manufacturer: NEC Technologies

(0181 993 8111)

List price: £519

Pros: Fast; can function as a stand-alone compact disc player; competitive price.

Cons: The 50-pin high-density SCSI connector may complicate set-up.

Macworld rating: ★★★★★

A Sleek yet solid industrial design suggests the speed of NEC's MultiSpin 4Xe. This CD-ROM player is meant to be a desk-top workhorse.

The various tests I carried out confirm that it performs nearly twice as fast as Apple's CD300i for database-text searches, and it plays back movies with alacrity. Still, its performance varies according to application. Few CD-ROM titles contain QuickTime movies optimized for speeds above 300 KBps, and most text-intensive CDs have index files that make complex searches fast even on a single-speed CD-ROM drive. However, the MultiSpin 4Xe significantly boosts the retrieval speed of most text-based information your company may distribute internally, particularly large databases and archives of un-indexed text files. For most multimedia CDs, performance is slightly, but not dramatically, faster, so you spend less time waiting for screens and sounds to load.

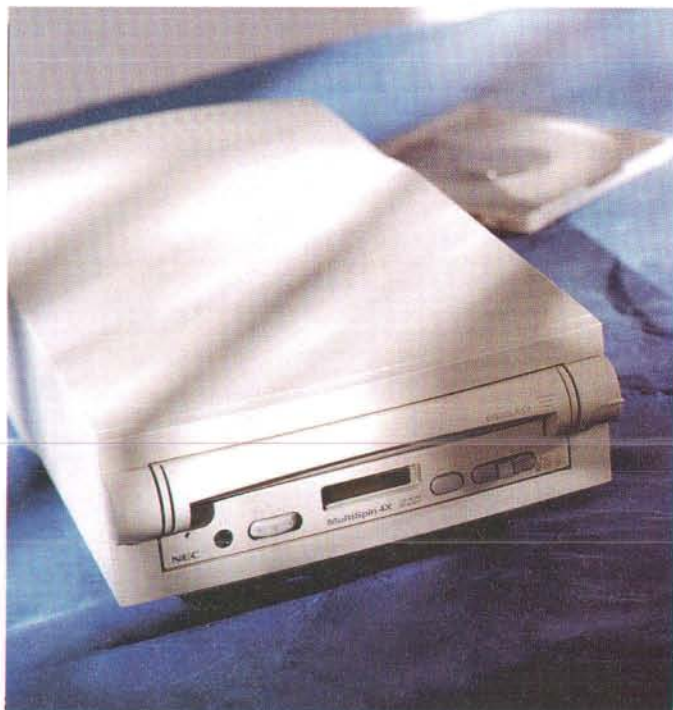
The MultiSpin 4Xe also functions as a stand-alone compact disc player. NEC provides controls on the front panel for playing, changing tracks and adjusting the volume

(when using the mini-headphone jack). Oddly, the stop button also acts as a mode switch to allow repeat play of a CD. A backlit liquid crystal display shows the current track, mode and other details, but it does not show the time remaining for either a song or the disc. NEC includes Casa Blanca Works' AudioCD to provide these features; however, when the software is active, these exterior control buttons (with the exception of the volume) are disabled.

The 4Xe has both an inner door and a scoop-like outer door to protect your discs from dust; the outer door doubles as the eject button. At first I thought the outer door would be clumsy and annoying, but it uses a latching mechanism that keeps it open when inserting or ejecting a disc, and closed while the drive is operating. At the rear of the long, heavy case, stereo phono jacks (like those on most stereo cassette recorders) provide an easy connection to a fully-fledged sound system. NEC includes a video-out port for future video discs; no titles are available at the moment to take advantage of this feature, but when they are, you'll be ready.

A thumb-switch SCSI ID and termination DIP switch make for simple configuration, but NEC chose to equip the drive with a 50-pin high-density SCSI connector. The MultiSpin 4Xe comes with a cable that connects it to the Mac, but if you want to include the 4Xe with other drives in a typical SCSI chain, you will have to buy a SCSI cable that adapts a 50-pin high-density connector to a standard 50-pin Centronics SCSI cable – the type used by most Mac SCSI peripherals. (These cables are available from NEC.)

I was surprised to find that the MultiSpin 4Xe uses a CD caddy instead of a drawer for inserting



RICHARD RETHEMEYER

discs. NEC says it chose this design to reduce the possibility of dust contamination and to allow the player to be operated on its side. While the case doesn't look like it should be placed on its side, I found that it worked fine that way.

In another unusual step, NEC chose to use Casa Blanca Works' software rather than its own branded floppy disks. Apart from slight confusion the unexpected software caused me, this choice presents no problems. Casa Blanca Works' DriveCD includes options for extra drive caches as well as utilities for mounting and gathering statistics on your discs.

The Last Word

Faster CD-ROM drives are clearly on the up, and with its competitive price, free technical support and two-year warranty, NEC's MultiSpin 4Xe is ready to fly. — **Tim Warner**



File compression utility



DiskDoubler Pro 1.1

Publisher: Symantec (01628 592222)

List price: £79

Pros: Good compression efficiency and speed; some good features removed in last version have been restored.

Cons: Limited ability to convert other compression formats; minor bug with System 7.5.

Macworld rating: ★★★★★



The Norton DiskDoubler Pro package is a new name for a collection of utilities that was formerly sold under "SuperDoubler". This includes DiskDoubler (DD), a utility that compresses files so freeing up disk space; AutoDoubler (AD), which searches your hard disk for files to automatically compress when the Mac is idle; and CopyDoubler, which speeds up copying files in the Finder.

Symantec has rewritten the two programs in native Power Mac code. The programs' installer includes both 680X0 and native PowerPC code.

DiskDoubler, the core program in the package, has five levels of compression from which to choose. AD1 and AD2 are used for automatic compression with AutoDoubler; they compress quickly but not tightly. The remaining three levels – DD1, DD2 and DD3 – use the same compression algorithm, but they trade compression time for efficiency. In my tests, compression speeds improved using a Power Macintosh.

After many complaints, Symantec has put back a feature removed from the last version of DiskDoubler: the ability to double-click on a file in the Finder and have it transparently

continues page 60

decompress and then launch. The last version needed you to double-click on the file once to decompress it, and then again to launch it. Version 1.1 lets you select either method via a Preference dialogue box.

While previous versions allowed you to drag and drop files onto DD's icon to compress them, DiskDoubler Pro lets you hold down the shift or control key when you drag and drop a file to bring up a dialogue box for changing the compression method.

AutoDoubler compresses files on your hard disk unobtrusively, and you should have to set CopyDoubler preferences only once. DiskDoubler Pro has lost none of its easy sophistication.

DiskDoubler converts Stuffit files (both archives and SEAs) to any of its own formats, but it has no other conversion capabilities. If you frequently send files via modem, you may want to use Aladdin Systems' Stuffit Deluxe package, which includes conversion utilities for many different compression formats.

If you use System 7.5, turn on balloon help and point at the DD menu in the Finder, you get a false informational balloon referring to the Printing Menu. Symantec will deal with this in a bug-fix release.

The Last Word

The Norton DiskDoubler Pro package is a worthwhile investment if you want to squeeze more space onto your hard disk. Because of its ease of use, the package is also a good choice for beginners. AutoDoubler offers an excellent range of transparent compression options, and DiskDoubler works well for archiving and compressing files manually. CopyDoubler substantially speeds up copy operations in the Finder; you'll soon wonder how you ever got along without it.

If you own a Power Macintosh, DiskDoubler will give a significant speed boost; and if you're a SuperDoubler owner, then it's worth taking advantage of the free upgrade. But if you happen to own one of the other Symantec stand-alone packages, you'll have to decide whether it is worth the £49.50 to get the missing pieces. — **Tom Negrino**

Folder Crunching

Best result in test.
Shorter bars are better.



On a Centris 650 (25MHz 68040), I compressed a 3,844K folder containing both applications and documents using each of DiskDoubler Pro's compression methods. I then compressed the folder using the same machine with an Apple Power Macintosh Upgrade Card installed. — **Tom Negrino**

3-D type effects



Pixar Typestry 2.1

Publisher: Pixar

Distributor: Letraset (0171 928 3411)

List price: £199

Pros: Supports QuickDraw GX and TrueType GX fonts; renderer runs in native mode on Power Macs.

Cons: Access to bold, italic and bold-italic variants of non-GX fonts requires separate screen fonts for those styles.

Macworld rating: ★★★★★



Pixar's Typestry 2.0 has long been at the top of my list for 3-D type-effects, with its approachable interface, a strong array of animation features, and outstanding image quality.

Typestry 2.1 supports the enhanced features of System 7.5's QuickDraw GX. It uses the standard GX Page Setup and Print dialogue boxes, which provide more control over print jobs than do their non-GX counterparts. More significant, Typestry 2.1 is one of the first programs to support the fantastic flexibility of TrueType GX fonts, from automatic character substitution (for example, substituting a real fraction when you type "1/2") to ductility (the ability to adjust character boldness and width in continuous increments). And best of all for Power

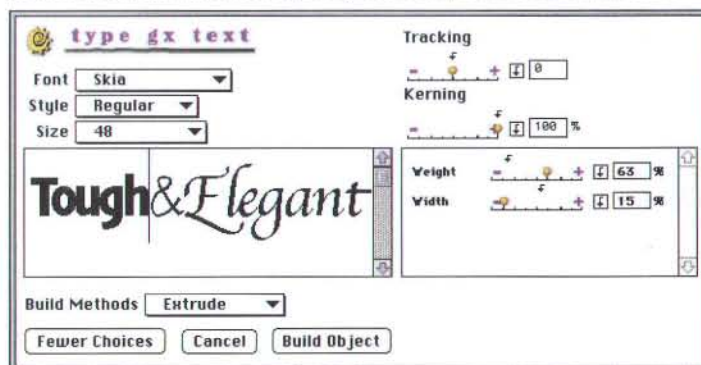
Mac owners, Typestry 2.1 runs in native mode on Power Macs, allowing you to see your 3-D masterpieces far faster than on a 680X0 Mac.

A new text tool provides the gateway to Typestry's GX font support. It displays a dialogue box in which you can type the text that you want to build into a 3-D object. A pop-up Style menu lets you access the special features built into a given GX font. If you've chosen a font that provides built-in tracking, kerning and weight-adjustment features, sliders appear to tweak those values, or you can type in numeric values.

Typestry 2.1 can even import and create 3-D versions of portable digital document (PDD) files created using QuickDraw GX's PDD Maker driver. This should let you create 3-D text or line art from any document, but you often end up with extraneous boxes and weird objects. It's easier to create 3-D line art in Adobe Illustrator and then importing the Illustrator file into Typestry.

GX in 3-D

Typestry 2.1 gives you full control over the special capabilities of GX fonts. With a ductile font such as Skia, sliders let you adjust the weight and width of characters.



The Last Word

If you've upgraded to System 7.5 but haven't installed QuickDraw GX, Typestry 2.1 may make you dig out your disks again. If you've been working with Typestry 2.0 on a 680X0 Mac, Typestry 2.1 is a great excuse to upgrade to a Power Mac. And if you haven't entered the world of 3-D type, and have a relatively fast Mac with at least 8MB of RAM and a maths coprocessor, give Typestry 2.1 a try. It adds a new dimension to the way you view type. — **Jim Heid**



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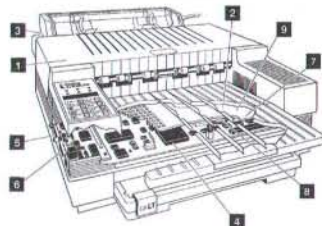
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Microsoft PowerPoint 4.0

Publisher: Microsoft (01734 270000)

List price: £245

Pros: Customizable tool bars; on-line help and guidance for beginners.

Cons: No tools or server for creating tables; minimal animation capabilities; incomplete manual.

Macworld rating: ★★★

In the competitive world of office software, standing still is never a sound strategy. So, hard on the heels of Aldus Persuasion 3.0, Microsoft has released an upgrade to PowerPoint, its popular presentation-graphics program.

A complete installation of PowerPoint takes up more than 30MB on your hard drive, although you can cut the requirement in half if you omit certain components, such as the 12MB collection of clip art. (Microsoft's installer informs you about disk space usage, and you can add or remove most components later by running the set-up program again.) At a minimum RAM allocation of 2,800K, PowerPoint's memory requirement is relatively steep but not out of line with those of many current applications.

Microsoft claims that PowerPoint 4.0 is compatible with any Mac equipped with a 68020 processor or higher; in my tests, performance was acceptable on both a Mac IIfx and a Quadra 650. (A Power Macintosh version should be shipping by the time you read this.)

Office Mates

PowerPoint 4.0 sports a new look that clearly reflects its close relationship to Word 6.0 and Excel 5.0. Instead of the handlebar that let you page through presentations in previous versions, PowerPoint 4.0 uses arrows that you click on to jump from slide to slide. In place of fixed tool palettes, the new release offers seven separate tool bars. You can customize any of the tool bars by dragging icons onto them and they can float anywhere on the screen, or you can dock them at the top, bottom or side.

One of the tool bars lets you launch Word, Excel, Mail, FoxPro or Project through a single click. (PowerPoint can also share custom

spelling dictionaries with its Microsoft Office companions.) Like Persuasion 3.0, PowerPoint 4.0 exchanges data with other programs using Microsoft's Object Linking and Embedding (OLE) protocol. For example, you can drop tables from Word 6.0, or spreadsheets from Excel, into PowerPoint presentations. The program ships with five OLE servers, including Graph 5.0 for designing graphs, Equation 2.0 for building mathematical formulas, and an application called Organization Chart for creating common types of charts.

Although PowerPoint provides a few features missing from Persuasion (such as the ability to add stylized text to your presentations through a program called Microsoft WordArt), Microsoft's graphing application is less capable than its Persuasion counterpart, Aldus Chart. Also, PowerPoint doesn't come with a server for creating tables, as Persuasion does.

PowerPoint 4.0 incorporates intelligent guides called Wizards that are designed to help you create effective presentations. For example, the AutoContent Wizard starts off by letting you fill in information for your title slide. It then asks you what type of presentation you're planning: recommending a strategy; selling a product, service, or idea; training; reporting progress; or delivering bad news. Once you've picked the presentation type, PowerPoint automatically creates an outline of topics and subtopics for you to fill in. (PowerPoint's other built-in helper, appropriately termed the "Pick a Look" Wizard, is even less compelling: all it does is let you select a presentation style from a varied collection of templates.)

PowerPoint includes several other features that I found helpful. For instance, if you cross the ToolTips option in the Toolbars dialogue box, PowerPoint automatically displays the name of a tool when you point at it. Although ToolTips provides less information than balloon help, it is far less obtrusive. PowerPoint 4.0 also provides on-line Cue Cards that give step-by-step instructions for performing common tasks, such as adding QuickTime movies or changing a presentation's colours.

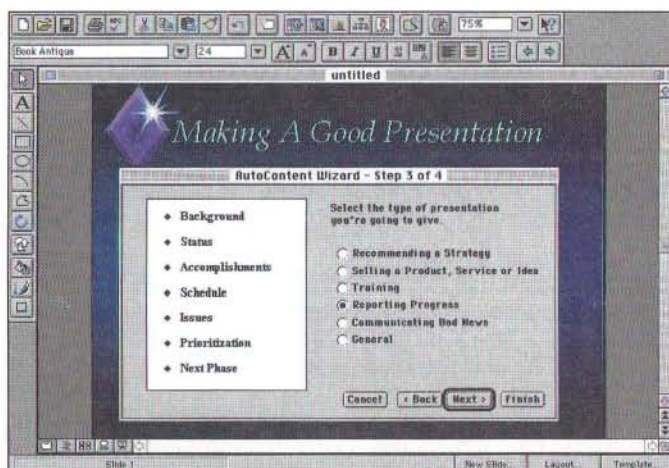
PowerPoint's built-in documentation is comprehensive and easy to navigate, providing both general and context-sensitive help. In fact, in many cases the printed manual refers you to the on-line help for more information. Equally annoying is Microsoft's decision to ship identical manuals with the Mac and Windows versions of PowerPoint. For example,

since almost all of the screenshots are from the Windows release, it's not clear that the Macintosh balloon help and the PowerPoint for Windows Help menu are one and the same.

Animation

People who give on-screen presentations will be disappointed by PowerPoint's lack of animation tools; you are limited to making successive text items in a series fly onto the screen from the top, bottom or side of the monitor. (In sharp contrast, Persuasion 3.0, although not as capable as Gold Disk's Astound, lets you animate graphics and text and create buttons to jump from place to place inside a presentation or launch another application.)

PowerPoint's lack of animation tools is especially surprising given PowerPoint's attention to detail in other areas. For example, clicking on



a pencil icon at the bottom of the screen allows you to annotate slides while your presentation is running, and a Hide Slide feature allows you to omit selected slides from a presentation without deleting them entirely. PowerPoint also lets you record the timing of your presentation, a boon when you're practicing for situations in which time is tight. Like Persuasion, PowerPoint comes with a viewer you can distribute at no charge to people who don't have the PowerPoint application.

The Last Word

If you're in the market for a presentation-graphics program, PowerPoint 4.0 is a good choice to use along with Word or Excel, as long as you don't mind the lack of animation functions. For general purposes, though, Persuasion's table tools, more comprehensive charting features, and basic animation capabilities give it the edge over PowerPoint.

— Franklin N. Tessler



Presentation Wizardry

PowerPoint's AutoContent Wizard includes a General category for subjects that don't fit into any of the five predefined types of presentations.

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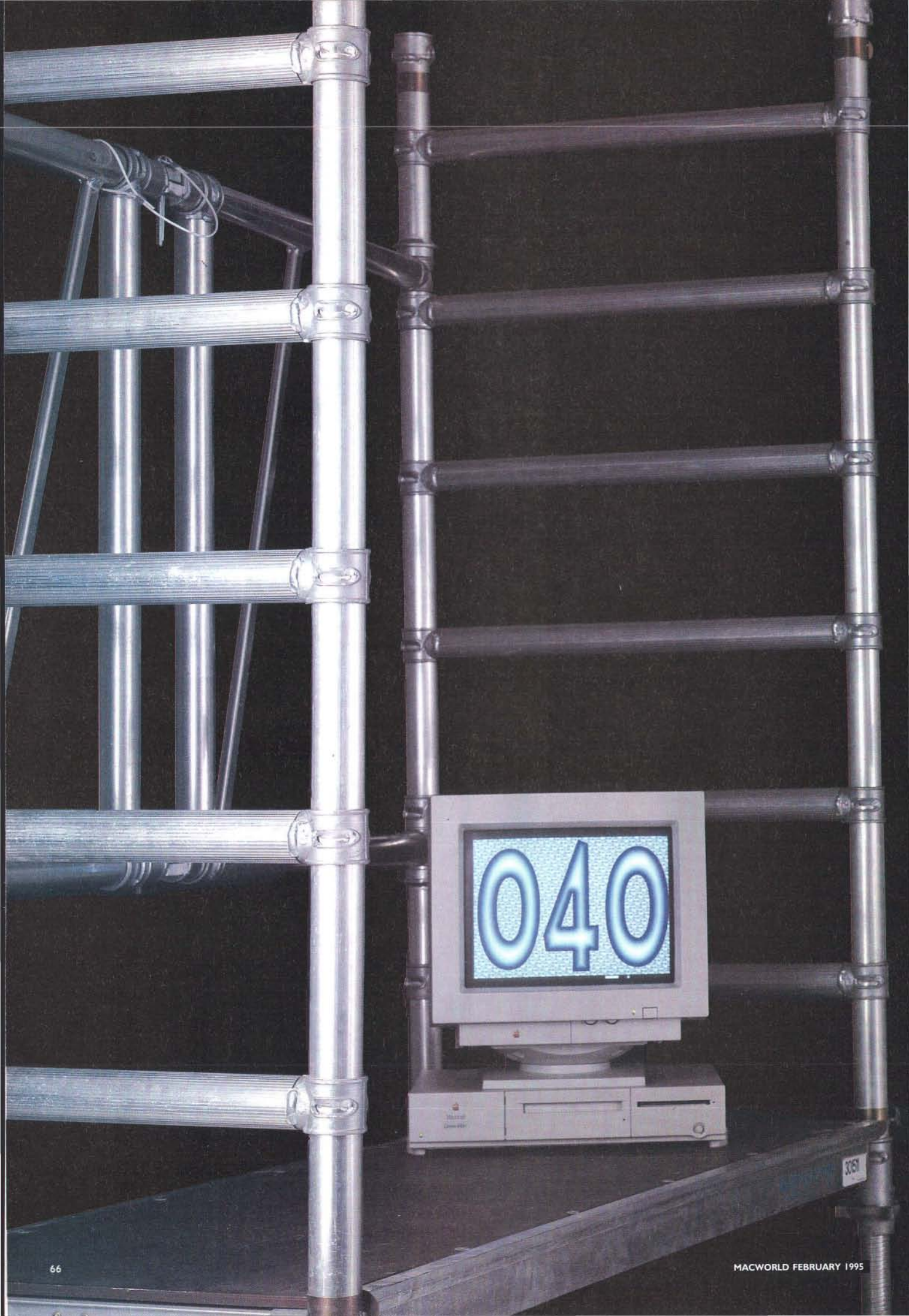
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Find out the best strategy for an affordable, powerful upgrade.

By Galen Gruman



Movin' on up

How to upgrade your Mac

Now that most major applications are available in native Power Macintosh versions, your Quadra or Centris – or even your accelerated IIci – is starting to look rather slow. Apple's Power Macs are fairly inexpensive, and there are several Power Mac upgrade options available, too. But there are even cheaper 040-based accelerators and CPU boosters. So what should you do?

In a nutshell, abandon any Mac in the 68040 line (or any other 680X0-based Mac) and move up to Power Mac. You will have to do it eventually: Apple's Macintosh future is Power Macintosh only. Expect the 040 models to stop appearing by the end of 1995.

continues page 69

Bitstream

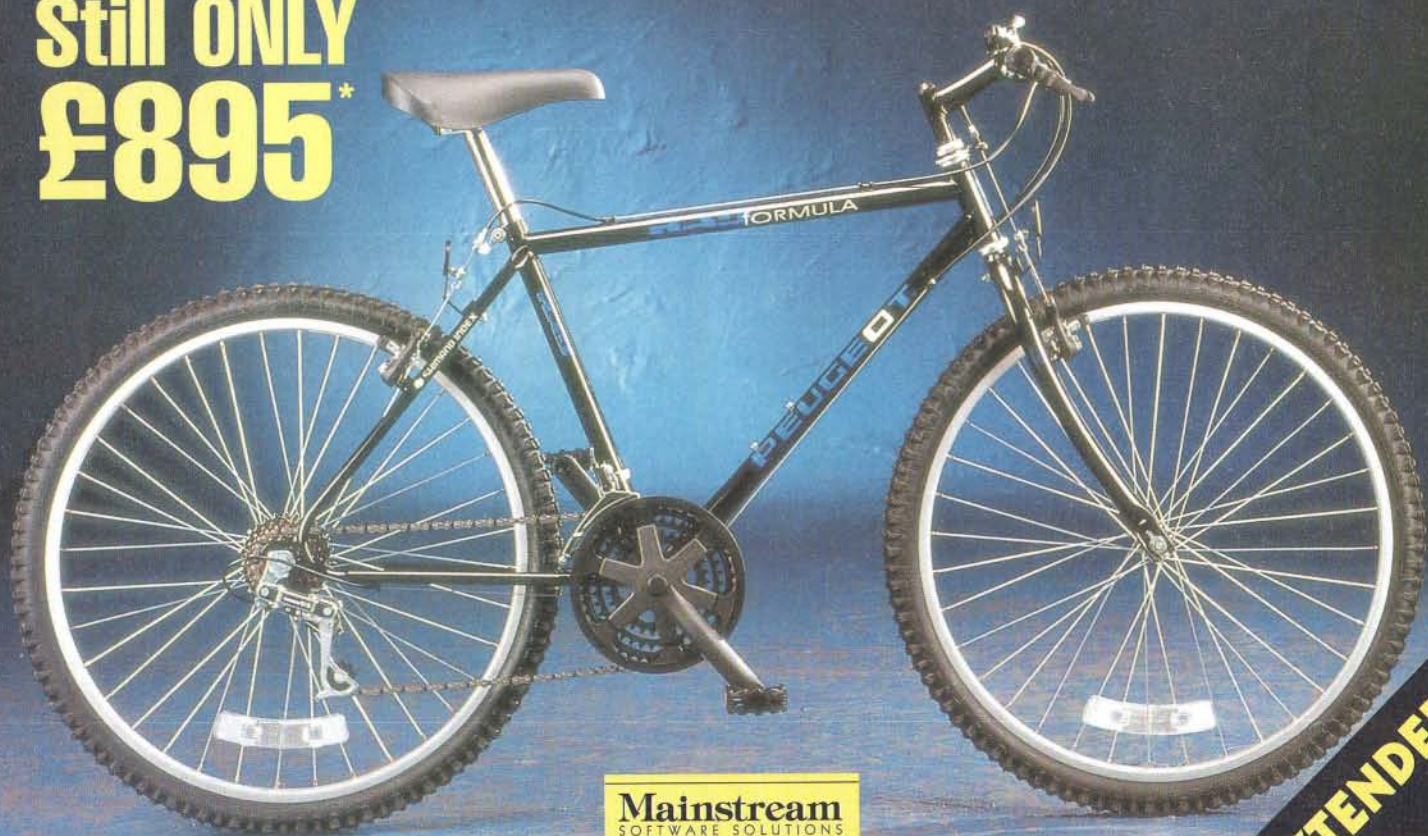
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Bye bye Accelerators

It's no accident that the Mac accelerator market has all but dried up: Applied Engineering, Dove Computer Corporation, Fusion Data Systems, Harris International, Impulse Technology (now part of the Spectra Systems Corporation networking company), Novy Systems and Total Systems have stopped selling accelerators; DayStar Digital has cut its staff by about half; Logica Research (renamed PowerLogic) and TechWorks are now working on cache cards; Radius is focusing its Rocket line on multi-processing, something that just a small percentage of users will benefit from, including those doing 3-D rendering; and DiiMo Systems, Extreme Systems, NewLife Systems and Brainstorm Products are working on inexpensive upgrades for various obsolete Macs.

The only growth seems to be in the area of CPU boosters, a type of upgrade that makes a Mac work faster than it is designed to. Two companies – KS Labs (Domain, 0191 266 8998) and Newer Technology (Principal, 01706 832000) – sell these types of upgrades for Power Macs, and these two companies plus Mobius Technologies (0101 510 654 0556) and Sonnet Technologies (010 714 261 2800) sell similar boosters for 680X0 Macs. Though neither endorsed nor rejected by Apple, CPU boosters are effective, inexpensive solutions for a moderate performance boost, according to Macworld Lab testing (see the “Even Faster Power Macs” box).

The accelerator market has collapsed for a simple reason: Apple sells new, fast Macs for just a few hundred pounds more than the cost of an accelerator card. And accelerator makers can't really do anything about it, because the newest Macs use a new processor and ROM. Retailers can buy PowerPC processors from IBM or Motorola for use in an accelerator, but they can't buy the Mac ROM.

Apple has licensed the ROM only to DayStar, and only for upgrades for a few Macintosh models (such as the Quadras and the IIfx). And DayStar has no PowerPC upgrade for the IIfx, and neither does Apple. So in such cases you might conclude that an inexpensive 040 accelerator is still a good idea.

You can get cheap 68040 accelerators from DayStar and others – the 33MHz Turbo 040i (which has no maths coprocessor) from DayStar, for example, costs £699 for the IIfx – a lot less than a DayStar PowerPro 601 PowerPC accelerator for a Quadra (about £1,500). But a 40MHz model costs about £895 (street price) – you're fast approaching the price of a Quadra 630 or Power Mac 6100.

Megahertz for megahertz, a PowerPC is much faster than an 040. For example, Macworld Lab compared a Centris 610 (which has a 20MHz 040) with the same Mac using a Sonnet Technologies Centris Booster (a 40MHz 040 accelerator) and with the same Mac using an Apple Power Macintosh Upgrade Card (which runs at 40MHz on a Centris 610). Overall, the 40MHz 040 accelerator made the Centris 610 run about 1.7 times as fast, which is good for a product with a direct price of

\$399. But the Apple PowerPC card, which costs about £450, ran twice as fast. With the small price difference, why settle for anything but PowerPC performance?

The Road to Power Mac

The path you take to Power Mac depends on where you're starting. I divide the Mac line-up into four categories and offer strategies for each:

- 68040 business Mac: the Centris and Quadra models;
- The Mac II line;
- The PowerBook line;
- Compact Macs like the Plus, SE and Colour Classic.

Powering Up a Business Mac

For business-level Macs, there are three options for upgrading to Power Mac:

- Add a Power Mac upgrade card to your Macintosh;
- Replace your motherboard with a Power Mac motherboard. To take advantage of this option, you must have a Centris 610 or 660AV, or Quadra 610 or 660AV (which can be made into a Power Mac 6100); a IIfx, IIfx, Performa 600, Centris 650 or Quadra 650 (which can be made into a Power Mac 7100); or a Quadra 800 or 840AV (which can be made into a Power Mac 8100);
- Replace your Mac with a Power Macintosh.

Accelerate to Power Mac Today, Power Mac cards are available from Apple and/or DayStar Digital for the Centris 610 and 650 and for the Quadra 610, 650, 700, 800, 900 and 950.

The option you select depends on which Mac you're starting with. Apple's Power Macintosh Upgrade Card, available from £450 to £600, is the best bet for a 33MHz 040 Mac (the Quadra 650, Quadra 800 and Quadra 950), since it turns those machines into 66MHz Power Macintoshes.



Apple's motherboard replacements don't make much sense for most 040 Macs, because the prices don't justify the performance boost.

You can use the Apple card in a 20MHz or 25MHz Centris or Quadra, but then you get performance below that of even the slowest Power Mac. A Power Mac card makes some sense as an interim upgrade for people who want better performance now but plan on delaying a full system replacement until the next generation of Power Macs ship in late spring. But ask yourself whether you really need the immediate performance boost or whether you can save the money for your eventual system purchase.

Power Mac via Motherboard Apple's motherboard replacements don't make much sense for most 040 Macs, because the prices don't justify the performance boost. Basically, it's cheaper to get a Power Macintosh Upgrade Card. For example,

continues page 70

you could spend about £1,200 to replace a Quadra 650's motherboard with a 7100/66's motherboard, or you could add a £600 upgrade card and get the same performance. Even when the performance is not equivalent, you have to question the wisdom of a motherboard replacement: is it worth £1,200 to turn a 25MHz Centris 650 into a 66MHz Power Mac 7100 when you can spend £600 to turn that same Centris into a 50MHz Power Mac? Or spending £1,600 to turn a 33MHz Quadra 800 into an 80MHz Power Mac 8100 when you can spend £600 to turn the same Quadra into a 66MHz Power Mac?



For certain Macs – especially the Centris 610 – the motherboard replacement is worthwhile. For the 20MHz Centris 610 and 25MHz Quadra 610, the replacement costs about £800. At that price, the performance difference just about matches the price difference: a 40MHz Power Mac Centris 610 for £600 has the same price/performance ratio as a 60MHz Power Mac 6100 for £800.

Owners of the 030-based Ilvix, Ilvi and Performa 600 should go for a Power Mac motherboard replacement. You get a 66MHz Power Mac 7100 for just £1,200 (£1,300 for the AV model), which is almost what it would cost you to buy a new Power Mac 7100 and sell your current Mac – but without the hassle.

For AV technology, you have no choice but to replace the motherboard since Apple's upgrade card doesn't work in any AV Centris or Quadra. However, I'd hold off on swapping an AV motherboard, since it's clear that Apple's next generation of Power Macs will have better AV technology than the current generation does.

You can also buy a Power Mac upgrade card from DayStar Digital (see "Power Mac Upgrade Options"). The PowerPro 601 comes in a 66MHz version and an 80MHz version, and it works in a Centris 650 and Quadra 650, 700, 800, 900 and 950. DayStar estimates that the 66MHz version will cost £1,295 and the 80MHz version, £1,695 (both versions with cache).

That's significantly more expensive than an Apple upgrade card to get full Power Mac performance. If you bought a PowerPro with no cache (DayStar sold the cache as an option until early November 1994), you didn't get the card's full performance. Macworld Lab tests show that a cache-less PowerPro running at 66MHz gives overall performance comparable to that of a 60MHz Power Mac 6100, not to the 66MHz Power Mac 7100 you'd expect. Adding the cache boosts the PowerPro to 7100/66 levels.

No Apple upgrade card can boost a Quadra to 80MHz, so if you really need 80MHz performance, you might be tempted to spend the £1,695 on an 80MHz PowerPro 601 with cache. That's almost the same price as a 7100/66 but with faster performance.

Soon, 80MHz will no longer be the fastest upgrade short of getting a new Power Mac. DayStar's forthcoming 100MHz PowerCard 601 will have a cheaper-to-produce design than that of its current PowerPro card.

It makes sense to let the high-end Mac market settle before you enter it, given Apple's recent shipment of the 110MHz Power Mac 8100, IBM's recent announcement of volume production of 100MHz PowerPC processors and DayStar's promise of 100MHz Power Mac 601 cards in January.

Breaking with Your Old Mac Finally, you can sell your current Mac, transfer it to another employee, with less-demanding tasks, or to a charity and buy a new Power Mac. That's not as costly as it might seem. You can sell a Ilci system (including monitor and keyboard) for about £500 and get a Power Mac 6100 system for about £1,800 – a £1,300 upgrade cost for overall performance five times that of the Ilci. Or you can sell a Quadra 900 for about £1,500 and buy a Power Mac 7100 system for about £2,500 – a £1,000 upgrade cost for overall performance of more than 1.5 times that of the Quadra 900.

LC 040s

Sadly, there's little you can do with most pre-040 Macs. If you're yearning for more performance, you'll probably have to buy a Power Mac. In mid-November, Apple and DayStar had just begun shipping the £599 card (called the PowerCard 601 by DayStar, and the Power Macintosh Upgrade Card for Entry-Level Macintosh by Apple) they co-developed for the 040-based consumer Macs that use the LC III-style PDS. (Our benchmark chart on the next page shows the performance of a supplied pre-release unit.)

The Mac II Line

A few Macs in the II line are candidates for upgrades rather than system replacements. For the Ilvi, Ilvx and Performa 600, Apple offers motherboard swaps to turn them into a Power Mac 7100/66 (about £1,200) or 7100/66AV (about £1,295).

continues page 72

WHICH MAC UPGRADES GIVE THE BEST PERFORMANCE?

■ = Fastest in group.

Longer bars are better. Results are times as fast as a Centris 650 (Centris 650 = 1.0). Upgrades are arranged in decreasing order of performance, grouped by the Mac they accelerate.

Overall Score

Shows weighted average performance with most emphasis on CPU-intensive tasks.

CPU-Intensive

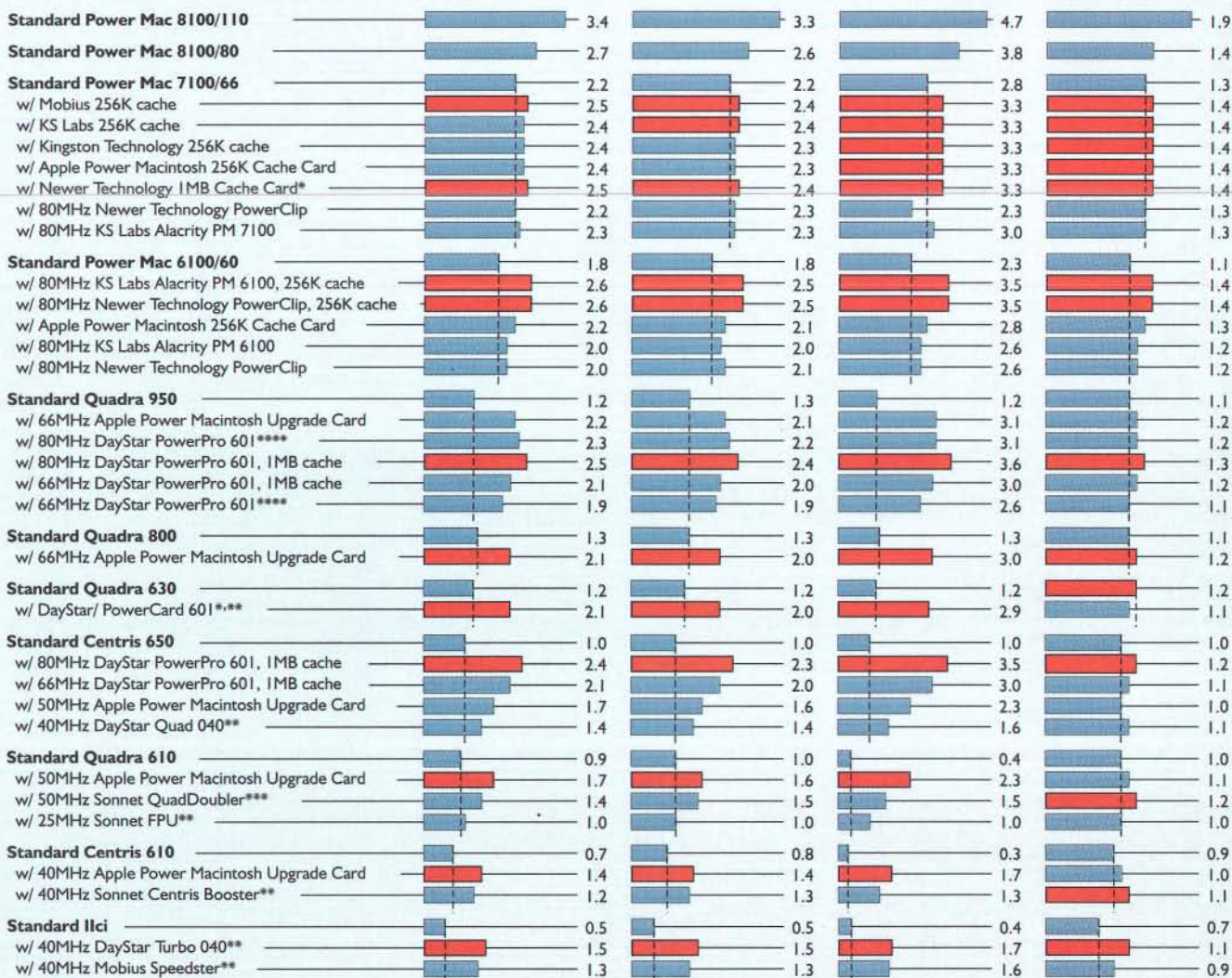
Shows expected performance for most operations within software.

FPU-Intensive

Shows performance for computational tasks that use floating-point unit.

Disk-Intensive

Shows performance for launching programs, and opening, closing, and copying files.



*Prerelease unit; performance of shipping unit may vary. **The same as Apple's Power Macintosh Upgrade Card for Entry-Level Macintosh.

Upgrade option does not convert the Mac to a Power Mac. *No longer sold without cache; results shown for comparison.

BEHIND OUR TESTS

These new Macworld Lab tests emphasize the performance abilities of the new Power Macintoshes and 040-based Macs. We tested their operation in eight applications plus the Finder and then ranked the results against the performance of a Centris 650. We then combined those rankings into three basic performance areas.

The CPU-intensive tasks evaluate the Mac's essential computing performance, and indicate the speed you'll get for most operations within your software. Having a cache in a system improves performance noticeably for these tests. The FPU-intensive tasks gauge performance for

tasks that use the floating-point unit built into the PowerPC 601 and 040 CPUs (an FPU is optional in other Macs' CPUs). The Disk-intensive tasks gauge the performance you'll get for launching programs, opening and closing files, and copying files. Macworld no longer reports the results for video-intensive operations since the built-in circuitry of 040 and Power Macs is now fast enough for video operations to rarely affect overall performance.

The CPU-intensive tasks include Gaussian blurs and unsharp masks in Adobe Photoshop 3.0; printing to Post Script files in Illustrator 5.5 and PageMaker 5.0; previewing, rotating, and

resizing in Illustrator; adjusting dye concentration in Fractal Design's Painter 2.0; video compression and movie assembly in Premiere 4.0; and scrolling and font changes in PageMaker 5.0.

FPU-intensive tasks include recalculations in Microsoft Excel 5.0; surface texturing and automatic cloning in Painter; rendering in Specular's Infini-D 2.6; and workbook evaluations in Wolfram Research's Mathematica 2.2.2. Disk-intensive tasks include file opens in Photoshop, Painter and PageMaker, plus file duplications in the Finder. The Overall Score combines the three tests: 60 percent for the CPU results and 20 percent each for the FPU and disk results.

These scores cannot be compared with previous Macworld features' and reviews' Core-Performance Index.

Our 680X0 test systems used 16MB of RAM, a 96K disk cache and 16-inch monitors operating at 8-bit colour depth (256 colours) under System 7.5. The Power Mac test systems had similar configurations, except they used 24MB of RAM with virtual memory turned off. For Apple's motherboard replacements, refer to the results for the new systems. For systems using CPU boosters, we report the results for the fastest speed we could set the booster to run at reliably. Macworld Lab testing supervised by Mark Hurlow and Danny Lee.

DayStar plans to release a 66MHz PowerCard 601 accelerator for the IIci in January – and it promises a 100MHz version for the IIci, IIvx, IIvi and Performa 600 later in 1995 – but I can't imagine investing more than a few hundred pounds in a pre-040 Mac. The II series' memory architecture, bus and video support are all pitifully inadequate for the needs of the current system software or power applications, so I question the advantage of sticking with a IIci even with a Power Mac accelerator.

Portable Macs

Deciding what to do with PowerBooks is trickier. They may use rapidly obsolescing 680X0 technology, but there are currently no PowerPC-based notebooks. Most PowerBooks – the 140, 160, 170 and 180 series, plus the Duo 210, 230, 250, and 270 – can be made to run faster by installing a CPU booster. Macworld Lab tests show that a CPU booster can shave off as much as a third of a PowerBook's processing time.

Digital Eclipse Software (0101 510 547 6101) and Dynamic Engineering (0101 408 336 8891) offer CPU boosters at a cost of \$300 to \$600, depending on PowerBook model and speed boost.

If you own one of the boostable PowerBooks, you could spend a few hundred pounds on improving the speed of your current Mac and then get a PowerPC PowerBook later (they'll probably be available by early summer). Or you can buy a 500-series PowerBook, which is designed so that a dealer can replace the 68040 processor and its related circuitry with a PowerPC processor.

Apple plans on shipping the 500-series upgrades by early summer, though such plans are not always reliable. (Apple says it will design the PowerPC PowerBooks to work with current 500-series PowerBook memory.)

If you don't have a PowerBook and need one, don't hesitate to buy one of the excellent 500-series units. But if you already have a pre-500-series PowerBook, I suggest that you sit tight. It's not clear what Apple will offer for its PowerPC PowerBooks, and there's no sense spending money now for a small boost, or for an 040 PowerBook, and then replacing the system six months year later with a PowerPC-based model.

Compact Macs

You could spend a couple of hundred pounds for upgrade cards with moderate performance from companies like DiiMo and Brainstorm Products, but why bother? If you're still using these Macs, they're either adequate for your needs or woefully inadequate. If they're woefully inadequate, a small performance boost won't change that. From a compact Mac, go for a Quadra 630 if your computing needs are modest, or better yet, a Power Mac 6100.

The Cost of Memory

Macs released since winter 1993 use 72-pin SIMMs while older models use 30-pin SIMMs, so if you trade up to a Power Mac or new 68040 Mac, you will probably need to get new RAM. If you're a Photoshop user, that can cost several times the Mac upgrade itself! For example,

getting 128MB of RAM – typical for a professional image editor – costs about £3,200.

Can You Retain Older RAM? Holding onto old memory is one of the attractions of DayStar's PowerPro cards, since they can use the memory on your 040 Mac's motherboard, whether it's 30-pin or 72-pin. But that attraction holds more promise than it delivers. All Quadras apart from the 700, 900 and 950, use 72-pin SIMMs, which a Power Mac can use if the RAM is 70 nanoseconds or faster.

And while the DayStar PowerPro cards let you leave your 30-pin SIMMs on the motherboard of your Quadra 700, 900 or 950 and let you add 72-pin SIMMs to the card, using only the 30-pin SIMMs on your Mac's motherboard slows the PowerPro considerably – DayStar's software even warns you of that at start-up.

Macworld Lab tests show that for some tasks, including recalculations in Microsoft Excel 5.0, scientific analysis in Wolfram Research's Mathematica 2.3, printing in Adobe Illustrator 5.5 and rendering in Specular International's Infini-D 2.6, the addition of the DayStar Fast-Cache PowerPro 1MB cache card to the PowerPro card

increases performance by 20 to 35 percent. For other tasks, such as applying filters and colour-space conversions in Adobe Photoshop 3.0 and changing fonts in Adobe PageMaker 5.0a, the performance difference is 10 percent or less. Now that DayStar includes the cache with its PowerPros, you get that extra performance for free.

The much cheaper Apple upgrade card (£450 to £600, depending on where you buy it) also lets

you keep the motherboard's 30-pin SIMMs, and it includes a 1MB cache to help compensate for the motherboard's slower memory speed. But the Apple card accepts no memory of its own, so you can't expand your memory as with the PowerPros.

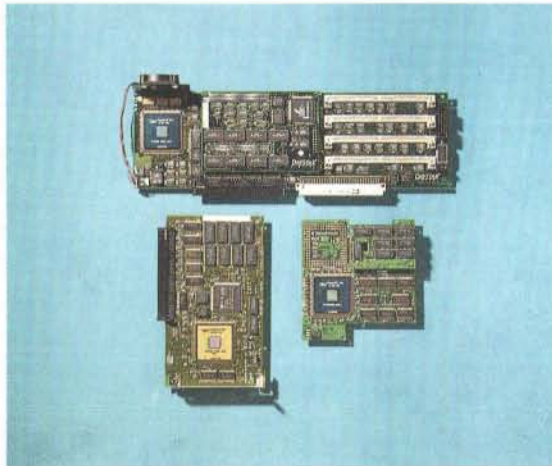
Don't upgrade until you can afford the cost of new RAM. If you need an immediate performance boost, spend as little as possible to improve your current system as an interim solution and save the big bucks for your new system with the RAM you will ultimately need.

Why Virtual Memory Is a Must No matter what kind of SIMMs you have, moving to Power Mac means buying more RAM. Native Power Mac programs typically need 50 to 150 percent more RAM than their 680X0 versions.

That's why Apple recommends you use virtual memory on a Power Mac – to increase the effective memory amount so you can actually run your programs. A better solution is getting Connectix Corporation's £70 RAM Doubler 1.5.1 (CU: 0181-200 8282), which increases the amount of memory via compression so resulting in faster performance than using disk-based virtual memory. (RAM Doubler and virtual memory cannot be active simultaneously, however.)

Even if you use RAM Doubler, make sure you have enough physical memory. A Power Mac should have 16MB of RAM; that will let it run System 7.5 with large

continues page 79



Power Mac Upgrade Cards
Clockwise from the top, the DayStar Digital 80MHz PowerPro 601 with FastCache, the Power Macintosh Upgrade Card for Entry-Level Macintosh, and the Power Macintosh Upgrade Card.

Power Mac software – current state of play

Power Mac software support has grown rapidly in the last few months, as the following table shows. It lists programs shipping as of November 1, 1994; for more recent releases, look at Macworld's various news sections. Different upgrade prices may be available for users of earlier versions; check with the company. In some cases, the previous version is the same as the current version; that indicates a program previously available only in 680X0 Mac format now available in Power Mac format. – **Galen Gruman, Matthew Hawn and Joanna Pearlstein.**

Product	Publisher	Product Type	Distributor	Price	Contact
Machansa	Baltic Business Sw	Accounting for accountants	Wizard	from £790	01932 570230
Modulus Gold v.3.5.2	Vector Software	Company management system	Vector Software	£2,495	0181 941 6600
Modulus Silver v.3.5.2	Vector Software	Company management system	Vector Software	£295	0181 941 6600
Modulus Silver Duo	Vector Software	2-user Silver	Vector Software	£995	0181 941 6600
Modulus Silver Duo Plus	Vector Software	2-user Silver Plus	Vector Software	£1,495	0181 941 6600
Modulus Silver Plus	Vector Software	Silver + stock & order processing	Vector Software	£495	0181 941 6600
ClarisWorks v.2.1	Claris	Integrated software	Frontline	£195	01256 841841
DeltaGraph Pro v.3.0.4 MW	DeltaPoint	(7 + 8/94) Presentations	Frontline	£139	01256 841841
Full Contact v.2.01 ***	FITSsoftware	(8/94) Information manager	Amtech	£129	01202 476977
Micro Planner Manager	Micro Planning Int'l	Project & resource management	Micro Planning Int'l	£695	01272 509417
Micro Planner X-Pert	Micro Planning Int'l	High-level version of above	Micro Planning Int'l	£1,750	01272 509417
Phone Code Locator	To Telephone Europe	GB/International codes/places	To Telephone Europe	£50	0171 7345351
ArchiCAD v.4.121	Graphisoft	Architectural CAD program	Computers Unlimited	£3,495	0181 2008282
Architron II v.5.8	BAGH	3D architectural CAD program	Codec	£3,300	01926 330112
Ashlar Vellum	Ashlar Vellum	2/3D CAD program	Vellum Software	£1,495/£1,995	01223 300943
BluePrint v.5.0 CAD	Graphsoft	Cut-down version of MiniCad + 4	Gomark	£210	0171 7317930
form • Z v.2.5	autodesk	Solid and surface modeller	Gomark	£1,139	0171 7317930
IsoDraw v.2.5	Itedo	For technical drawings	Granthams	£2,495	01772 250207
LogoMotion *****	Specular Intern.	(8/94) 3D animation	Gomark	£115	0171 7317930
MiniCad 5 *****	Graphsoft	2D drafting, 3D design	Gomark	£595	0171 7317930
PowerDraw v.4.0 *****	Engineered Software	2D CAD program	PRD	£675	01902 755293
Presenter Pro v.1.5 *****	VIDI	3D-modelling 12/94	MGA	£1,850	0171 2295502
QuickSurf	NCM	2.5/3D modelling system	Patrick Thorn	£4,500/£7,500	01753 857029
Strata Studio Pro v.1.5	Strata	3D modelling/rendering 12/94	Gomark	£1,067	0171 7317930
StrataVision 3D v.3.0	Strata	3D modelling/rendering	Gomark	£496	0171 7317930
upFront v.2.1	Alias Research	3D conceptual drawing	Gomark	£251	0171 7317930
Virtus WalkThrough Pro	Virtus	Spatial design package	Gomark	£410	0171 7317930
Zoom v.3.0	Abvent	3D modelling for architects	PRD	£1,850	01902 755293
FaxExpress ***	Glenwarne	Single & multi fax software	Glenwarne	from £75	01753 643180
TeleFinder v.3.1	Spider Island	Remote Access/BBS	AM Micro	£369	01392 427473
Vicom MultiTerm	Vicom Technology	Flexible terminal emulation	Vicom Frontline Principal	£245	01202 293233 01256 841841 01706 832000
Vicom Pro	Vicom Technology	Development package	Vicom Frontline Principal	£495	01202 293233 01256 841841 01706 832000



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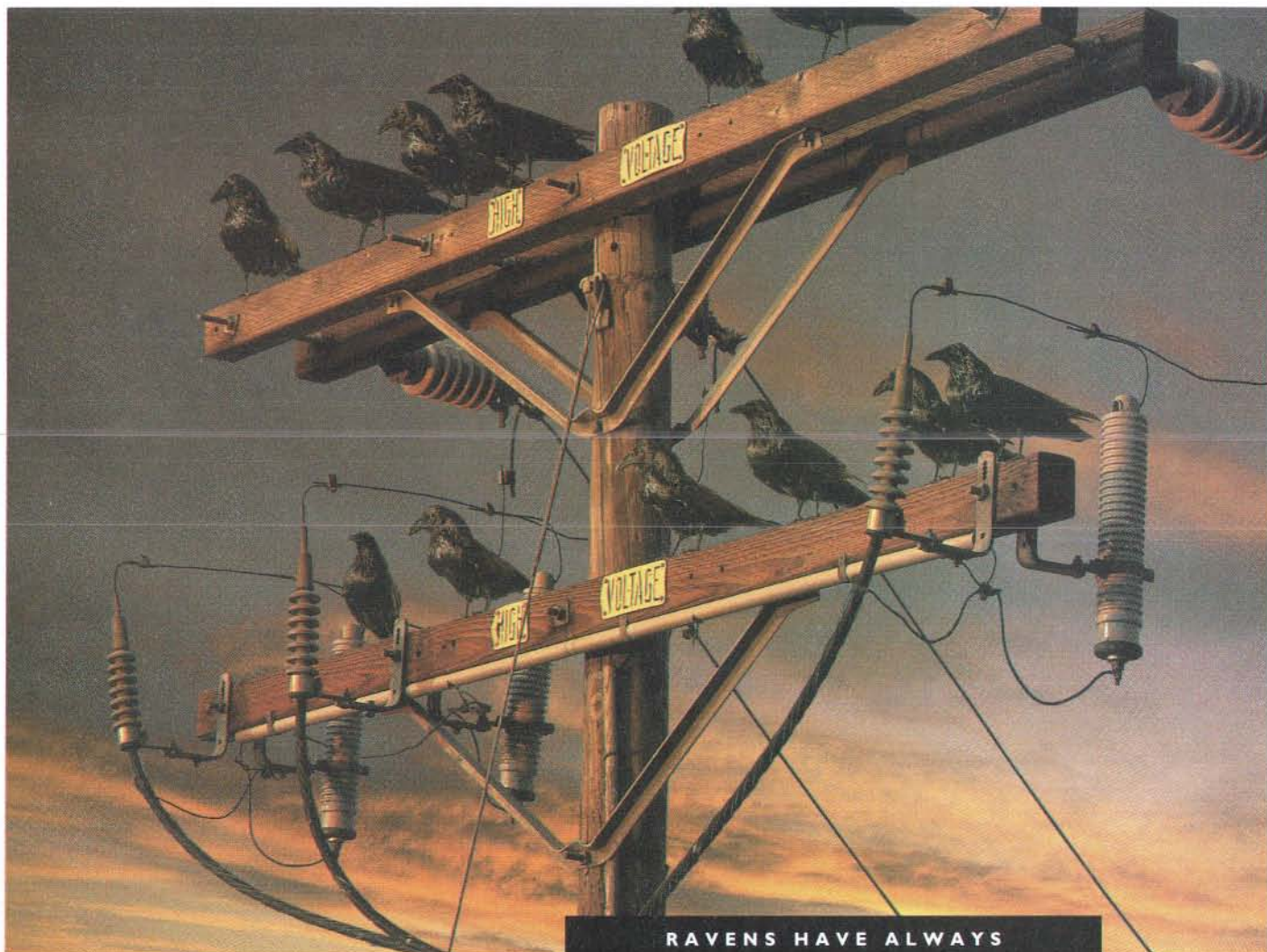
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Product	Publisher	Product Type	Distributor	Price	Contact
Backburner v.2.6	Specular	Network renderer	Gomark	£106	0171 7317930
EasyTransfer v.3.1	Access Privilege	ISDN File transfer	Mac Connect	£295	0191 2305596
EasyTransfer	Access Privilege	ISDN File transfer + Planet 2 card	Mac Connect	£999	0191 2305596
MacBlast	Open Comms	Communications and file transfer	Open Communications	£195	01728 832712
MacVisa	Hi Resolution	Network managment	Hi Resolution	from £375	01892 891291
SoftPC with Windows 3.1 ☼☼	Insignia Solutions	Windows emulation	Principal	£299	01706 832000
			Frontline		01256 841841
TheLink	Access Privilege	ISDN networking	Mac Connect	£350	0191 2305596
			4-Sight		01202 764401
Cumulus v.2.0	Canto Software	Image database	Computers Unlimited	5-users £1,099	0181 2008282
Cumulus Lite v.2.0	Canto Software	Single-user of above	Computers Unlimited	£179	0181 2008282
ColourCentral v.2.2	Compumation	Relieves printing delays	MacEurope	£3,495	01603 741222
Cutline v.3.3	Patrick Thorn	PostScript output to vinyl cutter	Patrick Thorn	£495	01753 857029
FrameMaker v.4.0 ☼☼☼☼	Frame Technology	Page layout for large tech docs	Frontline	£695	01256 841841
LogoCorrector v.2.0	Illom Ciccone	Tidies logos	Patrick Thorn	£295	01753 857029
PageMaker v.5.0 ☼☼☼☼☼	Aldus	Page layout	Principal	£695	01706 832000
			Aptec		0171 6271000
			Ingram		01908 260160
Scoop v.2.0	MacEurope	Editorial system	MacEurope	£595	01603 741222
QuarkXPress v.3.3 ☼☼☼☼☼	Quark	(9/94) Page layout	CU	£895	0181 2008282
			Ingram		01908 260160
Flying Nightmares	Domark Software	Flight simulator	Softline	£30	0181 4011234
Pathways into Darkness	Bungie	Best Role-Playing Game of 93	Softline	£40	0181 4011234
Alias Sketch! v.2.0	Alias Research	3D drawing 12/94	Gomark	£610	0171 7317930
Cirrus PowerLite v.2.0	Canto	Entry level scanning software	Computers Unlimited	£179	0181 2008282
Cirrus PowerPro v.2.0	Canto	Scanning software	Computers Unlimited	£549	0181 2008282
ClarisDraw ☼☼☼☼	Claris	QuickDraw program 12/94	Claris	£275	0181 7560101
ClarisImpact ☼☼☼	Claris	(5/94) Business graphics	Claris	£225	0181 7560101
Collage v.2.0	Specular	Image layout program	Gomark	£270	0171 7317930
Dimensions v.2.0 ☼☼☼☼	Adobe	(9/94) 3D PostScript design	Principal	£165	01706 832000
F. Design Painter v.3.0	Fractal Design	24-bit colour paint	Principal	£375	01706 832000
			Letraset		0171 9283411
F. Design Dabbler ☼☼☼	Fractal Design	(7/94) Basic painting	Principal	£75	01706 832000
FotoLook 1.2	Agfa	Scanning software	Agfa	£299	0181 5602131
FotoTune 1.1	Agfa	Scanning software; CD	Agfa	£495	0181 5602131
FreeHand v.4.0 ☼☼☼☼☼	Aldus	PostScript drawing	Principal	£450	01706 832000
			Aptec		0171 6271000
FreeSign	Patrick Thorn	For sign makers or screen printers	Patrick Thorn	£895	01753 857029
Illustrator v.5.5 ☼☼☼☼☼	Adobe Systems	(7/94) PostScript drawing	Principal	£480	01706 832000
Infini-D 2.6	Specular	3D modelling/rendering	Gomark	£540	0171 7317930
Kai's P. Tools v.2.1.	HSC	Photoshop Plug-In	Principal	£129	01706 832000
Live Picture v.1.5 ☼☼☼☼	FITS Imaging	(9/94) Image manipulation	Principal	£3,500	01706 832000
MacroModel v.1.51	MacroMedia	3D modelling 12/94	Computers Unlimited	£699	0181 2008282



Product	Publisher	Product Type	Distributor	Price	Contact
Morph v.2.5 ★★★★★	Gryphon Software	Image-melding utility	Softline	£179	0181 4011234
PhotoFlash v.2.0 ★★★★★	Apple	Image editing	Apple	£175	0181 5691199
Photoshop v.3.0 ★★★★★	Adobe Systems	(11/94) Image editing (colour)	Principal	£725	01706 832000
Ray Dream Designer v.3.1.1 ★★	Ray Dream	Modelling/rendering 7/94, 12/94	Principal	£275	01706 832000
Sculpt 3D/4D	Byte by Byte	12/94 3D Modelling	PRD	£2,210	01902 755293
Shade III v.1.1	Exttools		PRD	£2,666	01902 755293
Sketch!	Alias Research	3D modelling and rendering	Gomark	£699	0171 7317930
TextureScape	Specular	High-res synthetic images	Gomark	132	0171 7317930
Tree Professional	Onyx Computing	Tree-drawing package	Gomark	£740	0171 7317930
Maple V Release 3	Brooks/Cole	Maths/algebra package	Clecom	£320	0121 4714199
Mathematica v.2.2	Wolfram Research	Num'l and symbolic calculation	Wolfram Research	from £645	01993 883400
MatLab v.4.2 ★★★★★	Rapid Data	Numerical tech/graphics 12/94	Rapid Data	£1,600	01903 821266
StatView v.4.02	Abacus	Data analysis and presentation	Cherwell Scientific	£450	01865 784800
Premiere 4.0 ★★★★★	Adobe	Video-editing package	Adobe	£595	0181 5471900
VideoFusion v.1.6	VideoFusion	Video-editing package	Computers Unlimited	£549	0181 2008282
VideoFusion QuickFLIX!	VideoFusion	Video-editing for home/ beginners	Computers Unlimited	£129	0181 2008282
OmniPage Pro v.5.0 ★★★★★	Caere	High-end version	CU	£595	0181 2008282
			Aptec		0171 6271000
ClarisImpact	Claris	(7 + 8/94) Presentations	Frontline	£225	01256 841841
DeltaGraph Pro v.3.0.4 MW	DeltaPoint	(7 + 8/94) Presentations	Frontline	£139	01256 841841
C/C++ SDK v.1.0	Absoft	Programming solution	Amtech	£335	01202 476977
Fortran 77 SDK v.1.0	Absoft	Programming solution	Amtech	£595	01202 476977
Frontier v.1.0 ★★★★★	UserLand	AppleEvent Scripting Tool	MacLine	£195	0181 4011111
MacFortran II v.3.3	Absoft	Program development language	Amtech	£449	01202 476977
Optilab Pro 2.5	Graftek	Image analysis	ME Electronics	£2,390	01734 500551
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DanRIP	Stantech	RIP for Linotype-Hell imagesetters	MacawMac	£16,000	01702 299700
Dayna Profiles v.1.0 ★★★★★	Dayna	(8/94) File navigation	Computers Unlimited	£99	0181 2008282
DiskDoubler v.4.0 ★★★★★	Symantec	(8/94) File compression	Amtech	£59	01202 476977
			Principal		01706 832000
Hard Disk Toolkit P.E. ★★★★★	FWB	Hard disk utilities	Midwich Thame	£149	01379 649200
Mac~Bac ★★★★★	Hi Resolution	Back-up for System 7	Hi Resolution	from £59	01892 891291
MacPrefect v.2.2	Hi Resolution	Educational Sw for ad'istrators	Hi Resolution	from £35	01892 891291
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Raven 8100

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INFOLINE NO. 129



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files in programs like QuarkXPress or Excel. If you're just doing word processing or spreadsheet manipulation, you can get away with 8MB of RAM – as long as you use just the core components of System 7.5 (no QuickDraw GX and no PowerTalk).

Do You Need Extra Cache? Many software companies say you need extra cache for a Power Mac, and Apple has thoughtfully included cache slots in the 6100 and 7100 (the 8100 comes with a 256K cache card already installed). But do you really need the cache?

Macworld Lab tests show that a cache card makes a Power Mac run between 10 and 20 percent faster than a system without the cache. In some cases, a cache card even gives better performance than a CPU booster. The operations most affected depend on your applications. If you're doing moderate text editing, page layout, or spreadsheet recalculations, you can get by without spending the extra £150 to £250 that a 256K cache card costs.

But the more computing-intensive the work you do, the more benefit you'll see from a cache. And computing-intensive does not mean just scientific analysis or 3-D modelling. Printing PostScript files is computing-intensive, and it's an area that can really benefit from a cache card. Speeding computation up by 50 percent cuts the time your Mac is tied up by about 66 percent. Professional layout artists will definitely want a cache.

But don't throw money away on a large cache. The typical performance difference between a 256K cache card and a 1MB cache card is just four percentage points, according to Macworld Lab tests. Cache maker Newer Technology says only a few areas, such as program recompilation and 3-D ray tracing, benefit notably from a cache larger than 256K.

And don't worry too much about where you get your cache card. Macworld Lab tested 256K cache cards from

five companies. While there were some slight differences in performance, the only real difference is the prices, which start from £160.

The Cost of Software

The other big cost of upgrading to Power Mac is the price of software. If you have five or six programs, you may end up spending £250 to £700 in buying the native Power Mac versions. Or will you?

Although there is a definite performance penalty to using 680X0 software on a Power Mac, for much mainstream software it is acceptable. If you currently have an 030-based Mac, your 680X0 software will run faster on a Power Mac under emulation than the same 680X0 software does on your 030 Mac. Owners of 040

Macs will see some

Affordable Power Macs may have hurt the accelerator industry, but they stand to benefit almost everyone else.

slowdown on a Power Mac, but we've found the slowdown to be a problem only with certain programs. For example, the 680X0 versions of Fractal Design Painter and Adobe Photoshop crawl on a Power Mac (you can speed them up somewhat by increasing their memory allotments). So does any program that is optimised for floating-point calculations, such as Microsoft Excel and Wolfram Research's Mathematica. But mainstay programs like Adobe's PageMaker, Novell's WordPerfect, and Microsoft Word are fine.

The first thing to do is upgrade programs that will see the biggest performance boost in native mode or that do

continues page 80

Power Mac Upgrade Options

Company	Product	Company's Est. Price	Mac Models Supported (upgraded speed)
Apple Computer 0181 569 1199	Power Macintosh Upgrade Card	£599	Centris 610 (40MHz), 650 (50MHz); Quadra 610 (50MHz), 650 (66MHz), 700 (50MHz), 800 (66MHz), 900 (50MHz), 950 (66MHz)
	Power Macintosh Upgrade Card for Entry-Level Macintosh	£449	LC/Performa 470 series (50MHz); LC/Performa/Quadra 630 (66MHz)
	Power Macintosh 6100/60 motherboard	£800	Centris 610, 660AV; Quadra 610, 660AV (all to 60MHz)
	Power Macintosh 6100/60AV motherboard	£1,000	Centris 610, 660AV; Quadra 610, 660AV (all to 60MHz)
	Power Macintosh 7100/66 motherboard	£1,200	Ilvi, Ilvx, Centris 650, Quadra 650, Performa 600 (all to 66MHz)
	Power Macintosh 7100/66AV motherboard	£1,295	Ilvi, Ilvx, Centris 650, Quadra 650, Performa 600 (all to 66MHz)
	Power Macintosh 8100/80 motherboard	£1,595	Quadra 800, 840AV (both to 80MHz)
	Power Macintosh 8100/80AV motherboard	£1,695	Quadra 800, 840AV (both to 80MHz)
Daystar Digital MacLine: 0181 401 1111	66MHz PowerPro 601 with FastCache	£1,295	Centris 650; Quadra 650, 700, 800, 900, 950 (all to 66MHz)
	80MHz PowerPro 601 with FastCache	£1,695	Centris 650; Quadra 650, 700, 800, 900, 950 (all to 80MHz)
	PowerCard 601	£TBA	LC/Performa 470 series (50MHz); LC/Performa/Quadra 630 (66MHz)

not run under emulation (anything that requires a 680X0 FPU).

Next, upgrade programs that have a new version. Most new software comes with the 680X0 and Power Mac versions in the same box or gives you a choice of which version to get. If you have already upgraded to a new 680X0 version, see if the company will let you upgrade again to the Power Mac version rather than buy a new copy.

Finally, upgrade programs that have no new version but have a native Power Mac version available. Prices for such so-called sidegrades are generally cheap, often less than £50. Of course, if the 680X0 version's performance is acceptable, you can just wait until a new version comes out and then get the Power Mac version.

If you also use a PowerBook, your software-upgrade strategy is a bit more complex. Some companies license software for use on two machines as long as they're not in use simultaneously. That means you can load, say, Microsoft Excel on your PowerBook and your Power Mac, if you use the PowerBook only when you're not using your Power Mac. Check with the developer to find out the least expensive upgrade option for such dual-machine situations.

Which Power Mac?

Once you've made the decision to buy a Power Mac, which one should you buy? When the Power Macs first came out nine months ago, the choice was easy. The 6100 was a great general-purpose system for those who didn't need NuBus expansion. The 7100 offered high performance plus NuBus expansion and generous memory capacity. The 8100 was the king of the hill for intensive tasks like multimedia authoring, database servers and colour prepress. Today, the Power Macs shake down differently. It's not that their performance or features have changed much – the issue is that six or so months from now, the current Power Macs will be replaced with Macs that offer better expansion buses and AV technologies.

Apple's first generation of Power Macs was meant to be highly compatible, to calm a customer base uneasy about the transition from one line of processors to another. So the first Power Macs were basically just faster Quadras. The next generation, though, due by summer 1995, will implement new technologies.

Apple is keeping quiet about most of them, but according to developers working with prototypes, there may be significant differences in SIMM support, which could render obsolete any RAM you bought for a current Quadra or Power Mac. (Apple confirmed it was exploring various memory architectures and would not commit to RAM compatibility, saying it was too early in the development cycle to do so.)

If you intend to buy NuBus cards, the same tension – between the benefits of an immediate upgrade and the long-term cost savings of waiting until Apple makes the transition to its new core technologies – applies. Current Power Macs support NuBus, but the next generation of Macs will not. Instead, they'll use the Peripheral Component Interconnect (PCI) bus. For video display, all but the highest-end

users will find that the Apple PDS-based video card in today's Power Macs is as fast as their NuBus video cards.

If you want to keep your NuBus video card, check with the company that sold it; you'll need new software and perhaps ROMs for it to run in accelerated mode.

If you've already invested in expensive NuBus cards, you may have two choices. One is to get a current Power Mac and use that system for several years while you set aside money for the eventual replacement of both the cards and the Power Mac. That may not be as bad as it seems, since you're likely to replace your cards at some point anyway in the normal course of upgrading your system's capabilities. If you're close to replacing your cards now, hold off and get a PCI Power Mac and PCI cards when they become available sometime in the latter part of 1995. If you're far from that point, get a NuBus Power Mac now so that you can get a return on your investment in NuBus cards.

Owners of the new 8100/110 have a second choice: get a NuBus Expansion Chassis from Second Wave (Macro: 0392 426473). Because Apple left out critical support for more than three NuBus cards in the Power Macs' ROM and motherboard circuitry, Second Wave's current chassis works only in the Power Mac 8100/110. (The NuBus standard specifies support for 16 cards on one computer.) But Second Wave is working on a PCI-to-NuBus expansion box, with Apple's support, so you can keep those NuBus cards for later use with the PCI Power Macs.

The Final Word

For most Mac owners, there are really just two basic choices to make in moving up to Power Mac: buy a new Mac or get Apple's Power Macintosh Upgrade Card.

Owners of the 33MHz Quadra 650, 800 and 950 should definitely get the card, while owners of the 25MHz Centris 650, Quadra 610, Quadra 700 and Quadra 900 will have to decide whether saving money (buying an Apple upgrade card) or getting maximum speed (buying a new Power Mac) is their top priority. And keep in mind that the Power Mac Upgrade Card will work with a CPU booster, doubling the speed of the boosted 040 Mac for even better performance.

Everyone else whose system performance is no longer adequate should get a new system, either a NuBus Power Mac now or a PCI Power Mac later. To save money, you can buy a Power Mac 6100 or 7100 and add a CPU booster and a 256K cache card to get 8100/80-like performance for less than an 8100 would cost.

The choices for upgrading a Mac have not been so stark since 1987, when Apple began developing different types of Macs and selling them simultaneously. It took dramatic price reductions and a commitment to consistency in core designs, like that of the motherboard, to simplify the Mac upgrade equation. Ironically, by making accelerator cards cost-ineffective and making new systems affordable, Apple has made Macs more like PCs, whose owners have long had the same basic options.

This breaks the old cycle of scrimping for an expensive Mac, buying it, and holding onto it for five years as better models come out while you then scrimp for a replacement.

Affordable Power Macs may have hurt the accelerator industry, but they stand to benefit almost everyone else. And they all but ensure that Apple's aim of transferring its active users to Power Macintosh will become a reality. After all, there's little reason to stay behind any more.

GALEN GRUMAN is a Macworld executive editor who covers system-level technologies and new Macs, including Power Macintosh.

MW EDITORS' CHOICE

To determine the best system-acceleration products, Macworld gauged performance, price, and compatibility. It quickly became apparent that only Power Mac options made economic and performance sense.

POWER MACINTOSH UPGRADE CARD

For owners of a Quadra 650, 800, or 950, this is the least-expensive choice. Plus it offers Power Mac 7100/66 performance. Company: Apple Computer. Company's estimated price: £699.

POWER MACINTOSH 6100/60 WITH CPU BOOSTER AND CACHE CARD

Combining this inexpensive Power Mac with the Newer Technology PowerClip CPU booster and a 256K KS Labs cache card offers a system that has near-8100/80 performance at a lower price. Companies: Apple Computer, Newer Technology, KS Labs. Prices: £1299 for the Power Mac 6100/60 (company's estimated price for a base system with 8MB of RAM), PowerClip £7TBA, and £160 for the 256K cache card.

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16MB PowerBook 500 Series	£449
32MB PowerBook 500 Series	£975
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4MB PowerBook 160-165-180	£89
6MB PowerBook 160-165-180	£125
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4MB PowerBook 165C-180C	£89
6MB PowerBook 165C-180C	£125
8MB PowerBook 165C-180C	£175
10MB PowerBook 165C-180C	£225
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8MB Duo/PB150	£230
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Ilvi-Colour Classic	£32
LCIII-Performa 450	£32
Ilvx-Duo-Performa 600	£32
LC475-Performa 475 (Full 68040)	£175

VIDEO RAM

256K VRAM (LCIII, Colour Classic, Performa 450, Centris, Quadra and PowerMac 7100)	£14
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Microtek Scanmaker II (+Photoshop LE)	£499
Epson GT-9000 (incl. full Photoshop)	£1020
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AV Drives & 1.7, 2, 4, 9GB	5	CALL	CALL
PowerBook 240MB Hard Drive		£225	£320

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270MB 3 1/2"	2	£389

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230MB (with 5 cartridges)	2	£699
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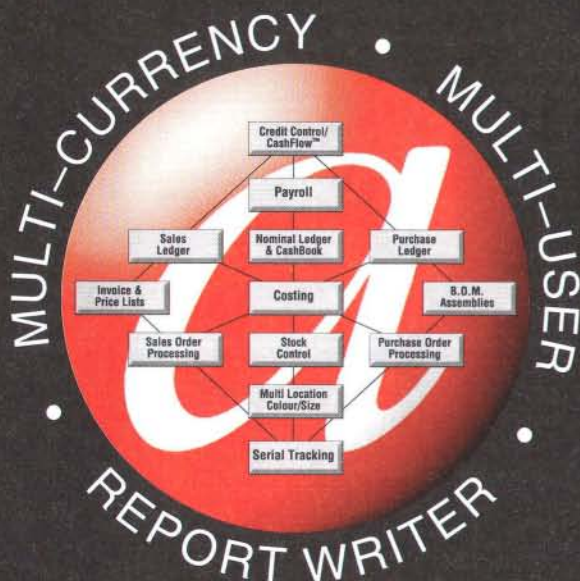
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MAC & PC

Will Windows 95 allow Microsoft to give PC users the Mac's interface on a plate?

By Galen Gruman

Window Topping

A first look at Windows 95

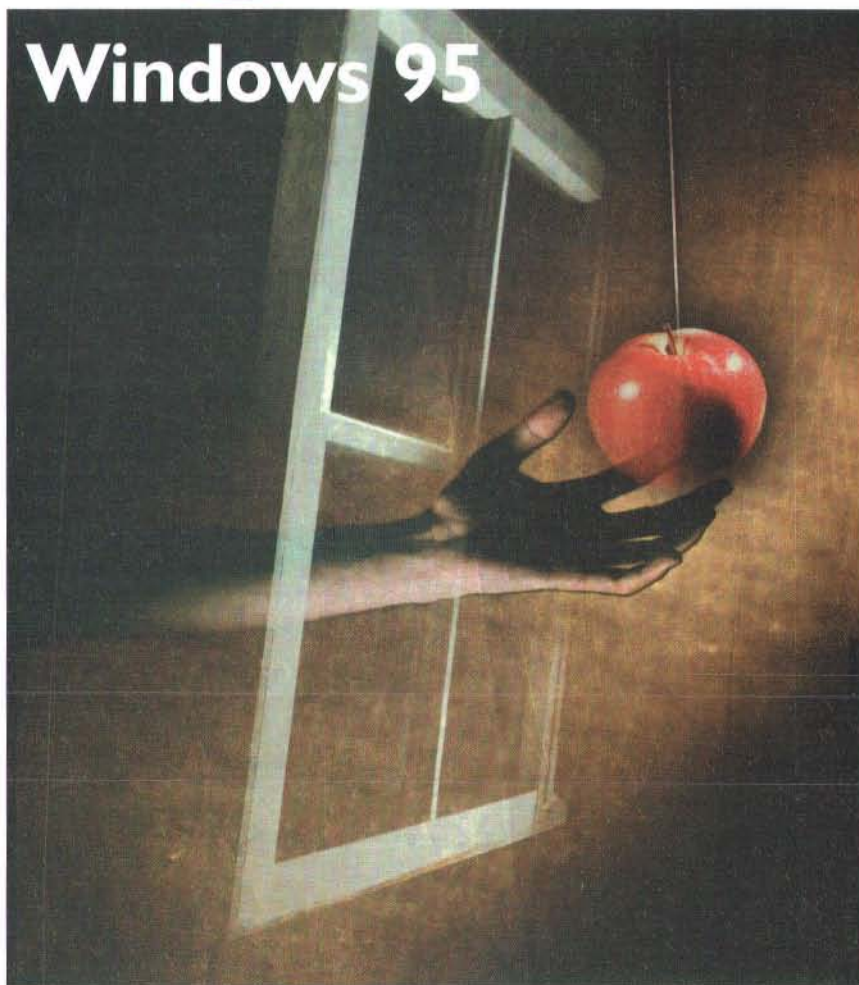
For the past six months, PC users have been inundated with information about Windows 95, code-named Chicago. Article after article describes the latest version of the nine-year-old Microsoft Windows as "Macintosh-like." Every version so far has been labelled Mac-like, but Windows 95 actually comes very close in many respects to fulfilling the claim, bringing many of the best Mac features to the PC. But make no mistake, this is no mere Mac clone. It borrows from many sources, including IBM's technically innovative, but ungainly, OS/2. The interface, though, is modelled on the Mac's, but embellished with the high-tech look of Microsoft's Office interface, which Mac owners will recognise from Word 6.0, Excel 5.0, and PowerPoint 4.0.

The new Windows offers plug-and-play capabilities (although only hardware designed to work with it matches the Mac's level of plug-and-play) and built-in networking and telephony. Gone is the division between Program Manager and File Manager – you can choose to use Mac-like folders or hierarchical menus. Gone is DOS, although you can still use DOS commands to quickly carry out tasks that are time-consuming with a graphical interface, like renaming multiple files.

All in all, Windows 95 poses a serious challenge to the Macintosh. Its graphical interface is good – in some areas better than the Mac's, in some equal, and in others not as good. But Windows is no longer a "wannabe". For most people, Windows 95 will be as good as the Mac, though different, and that's a problem Apple must face soon.

Touring Chicago

Although thousands of testers received beta copies of Windows 95, Microsoft has restricted their availability to the press – and insists that publications working with older betas not reveal their performance or compatibility findings. With Macworld, Microsoft officials expressed concern that Windows 95 might be compared with System 7.5. The screenshot "Welcome to Chicago" highlights the basic Windows 95 interface as implemented in

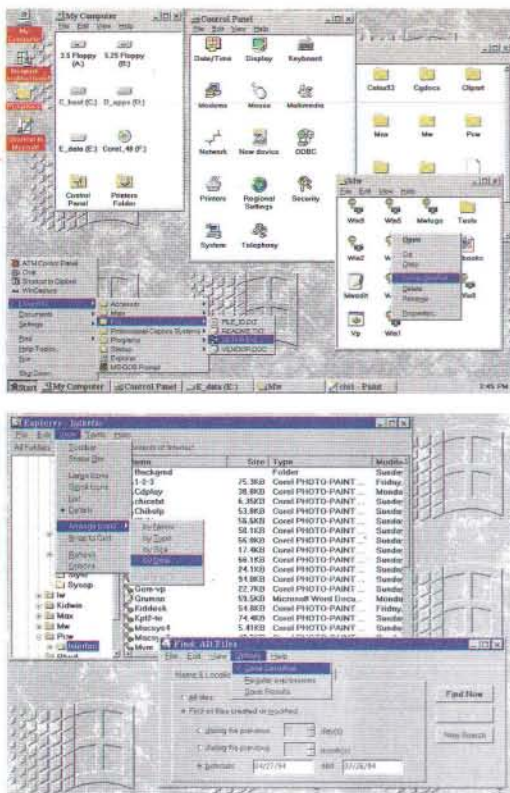


PHOTOGRAPHY: KEVIN IRBY

an early pre-release version. Microsoft says that few interface details will change in the final version. The delay in releasing Windows 95 – now scheduled for May or June – is to iron out compatibility problems with the great expanse of PC hardware and software, Microsoft says.

It's easy to see the Mac ancestry in Windows 95. The Start button, with its pop-up menu, compares with the

continues page 84



Welcome to Chicago
Top: A mix of Mac-like features for displaying folders and files, and OS/2-like features for getting information on items characterise the look and feel of Windows 95. Unlike changes to the Mac's latest System, 7.5, the additions to Windows feel better integrated; and unlike the latest OS/2, Windows doesn't add unnecessary complexity to accessing the item information.
Bottom: Windows 95 provides several ways to find information on your PC and on the network, including a hierarchical Explorer and a Search facility.



Apple menu on the Mac. Start includes several features familiar to System 7.5 users, including hierarchical menus and lists of recently used programs and documents. The row of open folders and programs at the bottom of the screen (called the Task Bar) corresponds to the program menu in the Mac's upper-right-hand corner. But the Task Bar is visible at all times, showing folders and programs, making it very easy to move around the system. Plus, Windows 95 lets you place the Task Bar at the left, right, top or bottom of your screen.

You can also see Mac-like folders and control how the system displays each folder's contents: by large icon, by name, with details on type and size, sorted by date or name, and so on – just like the Mac. Windows adds a neat feature to this scheme, however: you can opt to have subfolders open right on top of the folders that contain them, avoiding the explosion of folders that cover the Mac screen.

Windows 95 puts icons on the desktop for servers and drives – another Microsoft improvement on a Mac idea. Users on networks have two icons that represent navigation tools. My Computer opens to display icons for all drives (hard, floppy, CD-ROM and so on), any of which you can click on to open a list of folders; Network Neighbourhood lets you navigate all computers and devices that you are networked to. Programs compatible with Microsoft's MAPI (Messaging Application Program Interface) protocol give you a window containing all your E-mail, voice mail or fax messages.

Two other tools help you wend your way through your system. Explorer lets you navigate the contents of a drive or folder hierarchically, much as you move through folders in the Mac's list view. The other is the Search facility, which lets you find programs and files through a series of attributes – again, similar to the System 7.5 Find facility. Most users will probably settle on one or two search methods that they prefer. But it's nice not to be constrained by the system designers' dictates. The screenshot "Welcome to Chicago" shows these navigation tools.

A third area where Windows 95 and the Mac have traits in common is in active assistance. System 7.5's Apple Guide helps you learn operations; Windows 95 uses Wizards, semi-interactive macros that Word, PowerPoint and Excel sport. Microsoft's Wizards, in fact, came first but were used for advice-oriented help rather than semi-automation. Apple then used them to lead users through operating system operations. Microsoft now returns the compliment by using Wizards to hold users' hands through operating system tasks, such as installing printers (see the screenshot "Instant Information").

Windows 95 differs from the Mac in its control over system resources. Mac owners have long wondered why PCs use mice with two or more buttons. With Windows 95, there's an answer that they can understand. If an item – be it a program, file, control panel, disk or

server – is selected and you click the right-hand mouse button, a pop-up menu appears. From this menu, you can select common operations available for the item, such as deleting it, making a shortcut (like an alias on the Mac), copying it or, if it's a folder, changing how its contents appear (as icons or a list). You can also look at the item's properties, an OS/2-like feature that lets you see or modify characteristics of the item. For example, you can modify the icon, change the shortcut reference, make a file read-only or rename a drive. In some cases, such as for drives, you can also see graphically how much free space there is. These modifications are comparable to operations from the Mac's Finder's File menu and Get Info dialogue box, except that properties function on any kind of object – potentially very handy. The screenshot "Instant Information" shows three property sheets.

Another difference in Windows is the use of tabbed folders (as in the latest versions of Word and Excel for the Mac) to organise properties and settings. This lets Microsoft and third-party developers add a lot of controls and preferences to their software without creating overly crowded dialogue boxes and menu lists.

Surface and Substance

Many changes in Windows 95 are cosmetic. For example, the controls to resize windows have been changed from unintuitive triangles to shapes that mimic what actually happens to the window. At the upper-right corner of the window, the controls minimise (reduce it to an icon in the Task Bar), maximise to full screen, or restore (to the last user-defined size), and close a window. There are also new scroll bars whose scroll-box size is proportional, so you can quickly see how much there is to scroll through: the shorter the scroll box, the longer the scroll.

Other changes are very functional, and here we see some significant points of concern for Apple. In addition to the navigation tools, Windows 95 comes with built-in networking (including remote access, file sharing and security), built-in telephony (to manage voice, fax, and data lines, including automatic handling of calling-card information), and built-in multimedia capabilities (including motion-video play-back, audio recording and play-back, and compression). Much of this existed in Windows for Workgroups, a network-client version of Windows from late Autumn 1993 (a year or more after Apple introduced similar capabilities), but Windows 95 further refines and integrates them. It is designed for a networked, telecommunicating world. You don't need a special PC to use these features; any popular network, fax modem and multimedia bundle (typically a sound card and CD-ROM drive) will do. If there is to be an information superhighway, Windows 95 is ready to run on it.

Windows 95 seems to demand as much memory and disk space as Windows 3.1 – or System 7.5. I found the pre-release version to be very responsive on a 33MHz 80486DX-based PC, a Quadra 800-level PC that is now in the low-middle of the PC performance curve. Microsoft is aiming Windows 95 to run respectably on a 25MHz 486SX-based PC with 4MB of memory, which is the entry-level business PC of a year ago. It's a good bet that Microsoft will succeed: a pre-release version's performance is almost always slower than the final version, and the pre-release of Windows 95 is quite acceptable.

The new Windows retains a few advantages it has long had over the Mac, such as true multi-tasking (so programs can run simultaneously) and memory protection (so a crashed program usually won't affect other programs).

All in all, what Windows 95 offers is Windows as it should be. Although experienced Windows 3.1 users will

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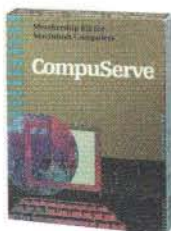
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take a few days to adjust to the changes in the interface, Windows 95 quickly starts feeling right. Having multiple approaches to dealing with items – from hierarchical pop-up lists, from pop-up menus within folders, from shortcuts, from the Task Bar – is confusing at first, but you soon settle into a way that suits your style. That's nice. Macintosh users in Windows workplaces where Macs are in the minority may wonder whether their employers will continue to maintain mixed-platform environments. To get a feel for what it's like to switch sides, see the "A Mac Owner's Tour of Windows 95." box)

Facing the Windows Challenge

Many software developers are privately disturbed about what lies beneath Windows 95's impressive new interface. They complain about the sub-standard Graphical Device Interface (the QuickDraw equivalent) and that the significant amount of 16-bit code in a purportedly 32-bit

operating system limits their ability to exploit the 32-bit features. These developers say schedule slips caused the Windows 95 team to jettison some improvements, such as a 32-bit GDI, already in place in the RISC-based Windows NT 3.5. Still, it's been clear since Windows 3.0 shipped in mid-1990 that Microsoft plans to beat Apple at its own game: making PCs capable but easy for people of varying experience to use. Windows 3.1, released in mid-1992, ended the slowness that marked its previous attempts and made Windows a viable system for most users. Though it took more than six years to get there (Windows 1.0 was released in late 1985), Microsoft finally had a direct challenger to the Mac interface. No longer was it a simple question of easy-to-use Mac versus standard PC, but versus easy-enough-to-use standard PC. Sure, Windows 3.1 was not as user-friendly as a Mac, but it was pretty close for most people.

continues page 88

A Mac Owner's Tour of Windows 95

Compared with Windows 3.1, the forthcoming Windows 95 looks to be an improvement. But does Windows 95 match the Mac's long-standing ease-of-use? I asked five Macworld editorial staff members, familiar with the Mac but not with Windows, to find out.

Look and Feel The harshest judgement belonged to administrative assistant Matthew Hawn: "The Windows implementation feels clunky and very toy-like, similar to the pre-System 7 Mac interface." But most testers felt that Windows 95's arrangement was somewhat complex, unsophisticated, or imposing. Once inside a program, however, the testers became comfortable, perhaps because so many programs have identical Windows and Mac versions. After using Windows 95 repeatedly, the testers warmed up a little to its look and feel, although no one found the interface to be as organic as the Mac's. "The interface seems heavier and less elegant in look and feel, but I think I could get used to that," said copy editor Jacqueline Kan.

Most liked the new Task Bar, which contains the names of all open programs and folders. Assistant editor Joanna Pearlstein's comment was typical: "I liked having the names of open folders and programs at the bottom of the screen."

A few Windows 3.1 holdovers frustrated some testers. For example, although he liked the window-restoration and maximising features based on the icons, Macworld On-line assistant editor Paul Devine was still unclear on the ability to turn a window into an icon (called minimising, something the Mac doesn't do). He missed having the ability to move document windows anywhere on the screen (in Windows all appear within the program's window): "It would drive me crazy to have to work with all the windows from one application in one location." But Devine admired the keyboard shortcuts built into every menu command and most dialogue-box buttons.

Ease of Navigation For years Mac owners have poooh-pooed DOS and Windows'

navigation methods. And despite Microsoft's addition of Mac-like folders, the Macworld testers still found navigation difficult. "Chicago's file management was confusing. I had trouble visualising exactly what was on the hard drive and where," said Pearlstein.

Windows 95 has several methods for navigating the operating system, and that bothered testers, who expected just one. But Hawn found that the most complex method, the Explorer, was "at first rather disorienting, but likeable after a while. That said, I hate file directories and the way it handles file organisation." Several testers never discovered some of the Explorer's more powerful features, like sorting the contents of a folder.



Mixed Reaction to Help

Some testers found Windows 95's help system rather daunting while others were impressed with its wide support for third-party products.

Access to Features To aid new users, access to all programs is in one place, which our testers liked. Pearlstein said: "The Start button was a good idea – it helped me sort out where to go." Editorial production manager Jeff Sacilotto was surprised by the extent of its functions: "The Start button on the Task Bar threw me at first glance. I was expecting to see only the restart and boot functions there, but it's the launcher for everything." When you press the right-hand mouse button,

context-sensitive menus pop up at the pointer location and show options appropriate for the selected item. But all the testers found these menus confusing. (Microsoft says that these shortcuts are meant for experienced users.)

A new help system features several co-existing types. That also threw some testers. "I only liked the one that displayed the help text in a window that let the elements below it show through its shadow for a more realistic experience. But the best part was the hyper-text links to related topics," said Sacilotto.

Pearlstein and Kan both wanted to know how to delete a file (you press the Delete key or click the right-hand mouse button to get a relevant menu). Microsoft's own testers had the same question, and Microsoft plans to add a wastebasket icon in the final version.

Configuration Our testers found it easy to configure Windows 95. Too easy – they were able to install drivers for non-existent components, and when Windows 95 later detected a problem during start-up, it could not recover. As with the Mac, you can use shortcut keys to bypass such problems, but the testers expected more active recovery in such cases. "You had to know about cards and driver files. AppleTalk seems much simpler," said Devine. (Windows 95 will approach such simple installation only with devices that conform to the new

Plug and Play hardware specification it co-developed with several other companies, including Intel.) But Sacilotto admired the number of help and configuration files for non-Microsoft products: "This gave me a sense of confidence. I believed that if I chose a printer, CD-ROM or whatever from the list of supported devices, I would be successful relatively quickly. It seems that with the Mac, if Apple didn't produce it, you're on your own."

Microsoft is aiming Windows 95 mainly at two groups of users: experienced Windows users and newcomers to computing. While Windows 95 will grow on current Windows users, novices may still find the Mac more compelling and easier to grasp.

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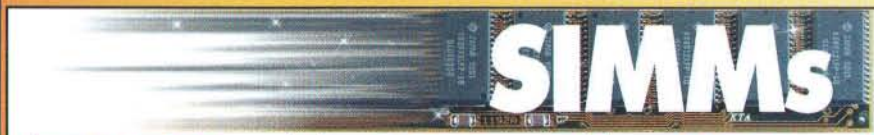


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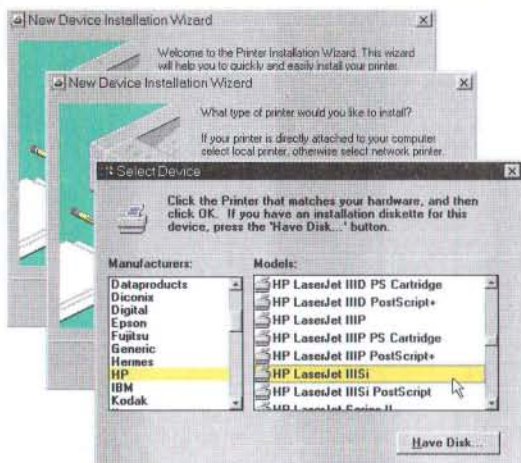
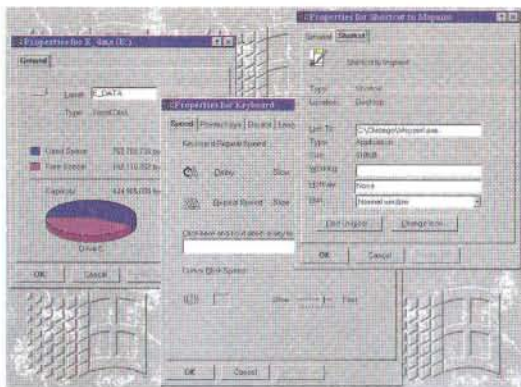
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Instant Information

Top: By putting information in property sheets – sophisticated versions of the Mac's Get Info dialogue boxes – Windows 95 lets you learn about, and modify, settings for items.
Bottom: Windows 95 employs Wizards to automate much of the hassle of installing software drivers and changing system settings.



Unfortunately, as Microsoft kept pushing closer to Mac-ness, Apple kept focusing on selling its ease-of-use against a competitor that was getting easier, not harder, to use. While focusing its marketing on diminishing differences, Apple also did little to redefine ease-of-use in its system software or to support compelling new capabilities that would make the Mac a must-have for specific groups of users. System 7 added QuickTime, colour and aliases; and Apple introduced the breakthrough Apple Remote Access software at about the same time. But it also added Windows-level memory requirements and poorly or incompletely implemented technologies like publish and subscribe, balloon help, and AppleScript. System 7.5, released in Autumn 1994, adds stripped-down versions of popular utilities; little-used PowerTalk communications capabilities from the System 7 Pro version; Apple Guide; and a new imaging model (QuickDraw GX) that adds good printing functions, at the expense of compatibility with many existing programs, and that includes sophisticated graphics capabilities that most third-party developers have already implemented within their programs and don't want to change.

Meanwhile, Apple undercut its own AV technology by implementing it on the short-lived AV Quadras and Centris using special digital signal processor chips. Apple and developers alike knew that the AV-capable Power Macs were only a few months away, so practically no one took advantage of the AV Macs' audio-visual processing capabilities. Worse, Apple shipped the AV Macs with several limitations in both video and audio capabilities – limitations that still exist today. (For example, the promised building blocks for telephony control don't yet exist, and the sound-recognition software is crude. Products from Apple, such as a monitor-mounted camera for video-conferencing, quietly never materialised after Apple's initial announcements.)

Most recently, Apple shipped fast Power Macs that don't do anything a Quadra can't do. The additional speed is nice, but where is the fantastic new world of capabilities that this speed was supposed to herald? Even Apple and its Claris subsidiary have done nothing to make the Power Macs uniquely powerful, the way the original Mac was compared with the original IBM PC.

All this leaves Apple in the position of having an operating system that does not offer a compelling advantage over Microsoft's Windows 95. Apple needs to put the Macintosh manifestly ahead of Windows, not on a par.

Apple's response to Windows 95 is something code-named Copland, the next version of the operating system – probably System 8 – which is supposed to bring the Mac to the next step, again surpassing Windows. Apple is keeping mum about Copland, saying it doesn't want Microsoft to copy Copland's features in Windows. Whatever Copland ends up offering, the system is not due out for about a year, giving Microsoft a tremendous

advantage in blocking new users from choosing Macintosh and perhaps convincing some cross-platform organisations to drop the Mac and consolidate on Windows. If people flock to Windows 95 (and despite Apple's statements to the contrary, I believe the Windows community will), that will underscore the need for developers to focus their efforts on Windows. Already, most major developers put the larger Windows market ahead of the Mac market. If the Windows market explodes in a frenzy of Windows 95 upgrades, the Mac will move out of the backseat and into the boot. By the time Copland is ready, Microsoft hopes to have its Windows 95 replacement – code-named Cairo – available. Microsoft often ships a couple of years late, so I won't hold my breath, but Microsoft is not about to stop. Details on Copland and Cairo are sketchy, but Microsoft has no intention of letting Apple surpass it.

Apple and many Mac owners often self-righteously chide Microsoft for copying the Mac, but this self-congratulation has let the Macintosh stay fairly static while Microsoft has pushed ahead. It makes no difference that Microsoft uses good ideas developed elsewhere, rather than developing fundamental innovations itself. (In fact, Apple and everyone else uses the same research community for its ideas. What Microsoft does differently is let other companies try out ideas on the market to see how well users accept them.) Wherever the ideas in Windows 95 come from, they threaten Apple. A year before the Mac was announced, Microsoft chairman Bill Gates announced the first version of Windows (although it didn't ship for almost three years). He knew what Apple was working on, and he was a believer. And he was shrewd enough to devise a strategy to change the PC market from DOS to Windows, all without losing control of the market. Apple spent its energies fighting Microsoft on the legal front and exploring innovative technologies, but it didn't integrate those technologies in a unified package, nor did it advance the interface design significantly past what the original System delivered. The Mac interface of today bears a very strong resemblance to that of a decade ago. What once looked advanced now looks almost historical.

Microsoft also exploited its knowledge of Windows (some say unfairly) to develop versions of Word and Excel for Windows (both based on the Mac versions, incidentally) that soon knocked the top competitors out of the market. Today, WordPerfect is a distant second in the Windows word processing market, and Lotus 1-2-3 is a distant second in the Windows spreadsheet market. They may rule the DOS markets still, but these are dead-end markets.

By contrast, Apple has done next to nothing to exploit the strengths of its operating system. Whether it's AppleScript, AV, publish and subscribe, Data Access Language, Power Macintosh or even QuickTime, Apple has left it to third parties to find significant advantages to using innovative Apple technologies. Claris has proved to be no help in taking advantage of new Mac technologies. Most Mac developers are busy selling to the three-times-larger Windows market – and they're not about to make their software substantially different on the two platforms. If they do, chances are the bigger market – Windows – will get most innovations. That puts the burden on Apple to create compelling, unique uses for the Mac so that there's a real reason to select Mac over Windows. We're still waiting. Let's hope the wait ends soon, before we find ourselves running a computer with no smiling face to greet us. **M**

Galen Gruman is a Macworld executive editor who has covered personal computing and computer technology issues since the '80s.

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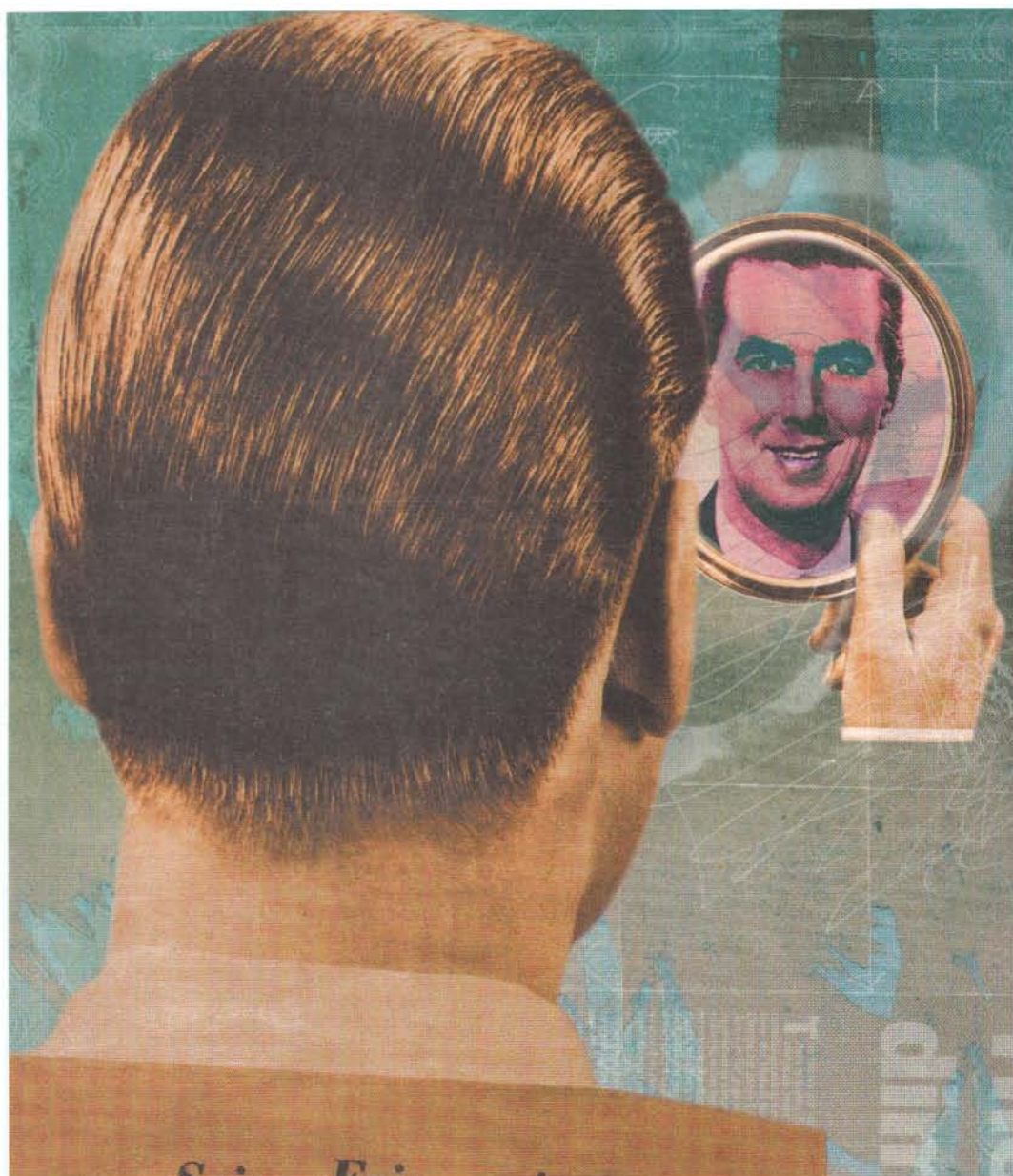


ILLUSTRATION: JOE MAGEE
Created in Adobe Photoshop 2.5
using a Centris 650 4/230



Today's image editors are redefining our professional landscape – but deciding which one satisfies your needs can be difficult.

By Deke McClelland

of image editors

For years there's been only one program for anyone serious about image manipulation: Adobe Photoshop. But these days, new image-editing applications – HSC Software's Live Picture, Specular International's Collage, and MacEurope Information Systems' Imagician, as well as the latest version of Photoshop – are introducing highly promising, alternative ways to manipulate graphics files. As a result, the way you edit images on a Mac is about to change (if it hasn't already) – even if you stay firmly ensconced in Photoshop.

Specifically, three major developments are changing the image processing landscape: layering, hardware-based speed improvements, and proxies (screen representations of actual images). Layers enable you to edit and composite independent foreground and background images within a single document. Hardware-based speed enhancements include specific support for the PowerPC chip, DSP acceleration and Imagician's proprietary RAM cache board. And proxies both speed up the editing process and enable you to apply as many adjustments as you want without adversely affecting image quality. Sadly, proxies are not a feature in Photoshop.

For this article, I worked with Adobe Photoshop 3.0 (£725; Principal, 01706 832000), HSC Live Picture 1.5 (£3,495; Principal), Specular Collage 2.0 (£279; Gomark, 0171 731 7930) and Imagician 2.14 (£3,195; MacEurope 01603 741222) to see how they compare in each of those three important areas. One additional program, Fauve Software's xRes (£799; CGS Computerbild, 0181 679 7307), purports to challenge Live Picture for less than a quarter of the cost but, unfortunately, was not available for review – even in a pre-release version – at press time. In addition, Macworld Lab timed the four programs in operations that they all perform – rotating, sharpening, blurring and so on – to see how they stack up in sheer computational power. (We tested 680X0 and native Power Mac systems if both versions were available.)

The Layered Look

The most important enhancement built into the new generation of image editors is the ability to work with layers. By allowing you to edit bits and pieces of images independently, layers let you make additional adjustments to a single foreground or background detail – days, weeks or even years into the image-editing process. You can change the layering order, introduce new layers or

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delete existing ones and change the way different layers blend together at absolutely any stage in the game (see "The Multiple Benefits of Layers"). In fact, layers are likely to change the way most of us think about editing digital photos: you're no longer editing a single image, you're editing multiple images that happen to coexist inside a single canvas. Of the four image editors I evaluated, Collage was the first to introduce layers, but all four offer some variation on the function.

Collage and Imagician The layering functions in Collage and Imagician are rudimentary, permitting you to transform a floating image, filter it and send it backward and forward in stacking order. In either program, if you want to filter or display only a portion of an image, you have to mask it.

Collage evaluates masks in the conventional fashion, by reading in a fourth channel of grey-scale data, but you can't generate or edit a mask inside the application. Conversely, Imagician allows you to create and edit a mask, but it evaluates this data differently than Collage, Photoshop or Live Picture. First, the mask permits one bit of data only. As a result, each pixel in the mask must be either black or white, so prohibiting anti-aliasing or feathering. And to determine the mask, Imagician reads the first bit of data rather than the last eight bits – it doesn't support masks created in other programs.

Live Picture In Live Picture, layers serve multiple purposes. You can manipulate the contents of the layers independently, mix layers and use them to assign effects. To reveal background layers, you can apply one mask and one stencil to each foreground layer. You can smear, paint and erase the mask, but you can only edit a stencil with the path tool. (A stencil in Live Picture is a resolution-independent masking outline that serves the same function as a clipping path in a draw program.)

Things become a bit laborious when you start to use Live Picture's painting and effects layers. If you want to add brush-strokes to an image, you must create one of three types of additional layers, each of which serves a very specific function. One layer lets you paint in a single hue; another enables you to paint in full colour; and the third is for applying predefined op-art effects of dubious merit, such as wood patterns and oil-on-water reflections. To sharpen a portion of a layer, you create a new layer immediately above it to contain the sharpening effect. Likewise, to distort, colour-correct or clone an image, you must create a separate layer for each effect.

The advantage of Live Picture's layering system is that you can selectively adjust effects by erasing, painting, and filling. You can also apply multiple distinct effects on top of each other. For example, if you aren't satisfied with the maximum application of a Sharpen/Blur layer, you can throw yet another Sharpen/Blur layer on top of it.

Unfortunately, you have to add layer upon layer to achieve effects you take for granted in all the other programs. You have no numerical control over the radius or threshold of sharpening or blurring effects. The colour-correction layer is sufficiently selective to map one range of colours to another range but insufficiently selective to map blacks, whites and greys separately (as permitted by, say, Photoshop's Levels command). Frustratingly, you cannot filter or retouch the contents of individual colour channels. Each Image Clone layer duplicates an image from a single reference point only, so to clone from multiple references you have to create multiple layers.

Keep in mind that each layer further complicates your image and incrementally slows down Live Picture's processing time. (For example, I could edit a four-layer image in real time but experienced two- to four-second

delays with a 16-layer image.) Except for transformations, you can edit only the topmost visible layer in the image. To edit brush-strokes and effects on a lower layer, you have to deactivate, and so hide, all layers above it. By deregulating Live Picture's layering scheme and permitting more operations to occur on a single layer, HSC would make the product more flexible and more applicable to the needs of professional users.

Photoshop The latest Photoshop takes a different and arguably more useful approach to layers. Though its methods for selectively undoing layer alterations are more limiting than those in Live Picture, Photoshop's methods for editing and enhancing layers are more flexible.

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Photoshop 3.0



This image, produced entirely in Photoshop 3.0 by San Francisco Bay Area artist Diane Fenster for Apple's Develop magazine, consists of seven layers: the background, the zigzag line, the books (each on its own layer), the magnifying glasses and arrows, and finally, the ear, eye and mouth (all on the same layer). The books, arrows and magnifying glasses were all composited in Difference mode. The zigzag line was a stroked path that Fenster airbrushed in Dissolve mode. The background was a scanned sheet of Japanese rice paper. The eye, ear and mouth came from separate Photo CD files, that Fenster blended one at a time with the background (using two layers). She applied the Mosaic filter to pixelate selected areas of the edges.

The Multiple Benefits of Layers



Layers enable you to select or mask distinct images, such as the planet and mountain goat in the first image (far left), combine them with other images and edit the layers individually. I used Photoshop to create the effects shown here, since it's the only program that can do all these steps.

In the second image, I composited the

planet and goat against a new background by adding another layer, but I could have achieved the same effect by preparing masks for use in Collage, creating hard-edged masks in Imagician or using Live Picture's silhouetting feature.

In the third image, I shifted the colours in the background, applied several filters to the planet, and skewed and sharpened the

goat. (Neither Collage nor Imagician can adjust colours in an image.)

With Photoshop, and to a lesser extent Live Picture, you can use paint and edit tools to mix layers manually, as I did in the fourth image. In the final image, I mixed layers automatically using overlay modes, a capability also provided by Collage. (Original images from PhotoDisc library.)

You can edit any layer, for instance, whether other layers obscure it or not. And you can edit a single channel in a layer and mix layers using sophisticated channel operations (many of which are also available inside Collage). These operations can be changed at any time without any destructive impact on the contents of each layer. What's more, you can use various tools to mix the contents of layers by smearing, blurring and sharpening them into each other. Unlike Live Picture, which smears the mask to merge layers, Photoshop can shift pixels in the layers themselves. And Photoshop offers additional masking options. Each layer includes its own transparency mask, a powerful and intuitive function that most of you will use without thinking twice. This mask automatically determines which portions of a layer are opaque, transparent and translucent. Similar to a Live Picture mask, a Photoshop layer mask lets you control the way its associated layer blends with the layers underneath it. Also, you can use one layer to mask another – great for painting images onto other images without straying outside the lines. Considering you also have access to standard selection tools – missing from the other three programs – Photoshop's masking controls can't be beaten.

One regrettable problem with Photoshop's layering scheme is that you can't transform multiple layers simultaneously, except by moving several entire layers or by flipping or rotating an entire document. By contrast, Live Picture lets you rotate multiple layers, skew them and so on. And while you can't edit pixels in more than one layer at a time in Live Picture, an effects layer applies to all layers underneath it. If you want to limit the area of an effect, you can mask the effects layer, even duplicating the mask from another layer.

As Photoshop offers no proxy scheme, its layers can take a severe toll on performance. Each layer added to a Live Picture document may slow things by a fraction of a second, but in Photoshop adding a layer can make several seconds' or even minutes' difference, particularly if the new layer increases the size of a document so it no longer fits in memory. As long as you're careful to work within your means and don't pile on the layers willy-nilly,

Photoshop 3.0 operates as quickly as previous versions. On the other hand, you won't experience such problems in Live Picture, Collage, or Imagician.

Revving the Image-Editing Engine

Photoshop, Live Picture and Collage have been updated to take advantage of the PowerPC chip. But don't expect the programs to respond to every single operation you throw at them without occasional delays. Even the proxy-based Live Picture and Collage keep you waiting when they convert or import images. Macworld Lab tests show that a Power Mac 7100 exhibited less-significant speed improvements over a 68040-based Quadra 800 when disk access (such as for importing or converting an image) was involved. Photoshop 3.0 was the tardiest of the bunch; when opening a 200MB four-layer image, Photoshop actually performed 15 per cent faster on the Quadra than on the identically-equipped Power Mac. (Macworld has discovered disk I/O problems that slow down some applications on the Power Mac.)

We saw twofold speed enhancements when operations were carried out mainly or exclusively in RAM, however. Filtering and transformation operations became almost instantaneous in Live Picture when running on a Power Mac, while they took two seconds on a Quadra. The biggest Power Mac-induced speed enhancement – nearly threefold – occurred when exporting our four-layer composition to TIFF format from Live Picture. The process took more than 16 minutes on the Quadra 800, compared with just under six minutes on a Power Mac. Though disk access is involved when exporting an image from Live Picture, most of the time is spent applying operations to the composition in RAM.

DSP Boards As Photoshop is the only image editor I tested that applies all operations to every pixel in the original image, it doesn't begin to keep up with the other programs except when opening and saving flat images or when scrolling and zooming. The delays are so pervasive that an entire category of DSP (Digital Signal Processor) acceleration hardware has grown up around Photoshop.

A year ago, some people predicted that the Power Mac would render DSP technology irrelevant, since the computer's RISC-based processing capabilities would theoretically outpace any data crunching that could possibly be carried out through the relatively old-fashioned NuBus port (see "Photoshop Accelerators," Macworld, April 1994, for a Macworld Lab comparison of DSP boards). But my informal tests of the only Power Mac-compatible board available at press time, the £1,099 Radius Photo Engine (Computers Unlimited, 0181 200 8282), suggest dramatic speed improvements. (Actually, the board sneaked into the office at the last possible minute, too late for inclusion in Macworld Lab's tests but just in time for me to play around with it.) Featuring four 66MHz DSP chips, the Photo Engine accelerated the common maths-intensive filters Unsharp Mask and Gaussian Blur more than threefold, provided that the image fit entirely in RAM; when Photoshop had to swap data from the hard drive, the speed benefits declined.

For example, with 60MB of RAM allocated to Photoshop and the Unsharp Mask filter set to an Amount of 200 per cent and a Radius of 10.0 (one of my favourite special-effects settings) it took 76 seconds to apply the filter to a 15MB image without the Photo Engine board and 21 seconds with – a nearly fourfold improvement. After I knocked Photoshop down to 16MB of RAM (not enough to hold the image in its entirety), the filter took 118 seconds without the board and 63 seconds with – not even twice as fast. To get the optimum results out of DSPs, then, you also need lots of RAM.

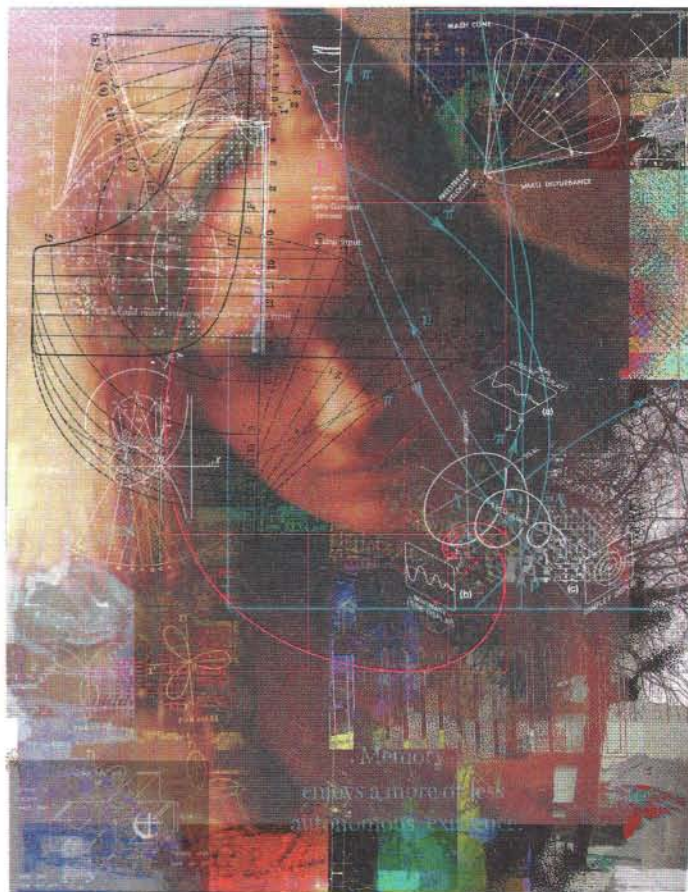
By the time you read this, at least one other Power Mac-compatible DSP board will be available. Scheduled to ship by the end of 1994, Adaptive Solution's PowerShop board (£TBA; Recognition Systems, 0121 333 5701) will provide 64 DSP circuits inside a single chip. As you might imagine, the company claims huge speed improvements, anywhere from fivefold for filters to 30-fold for RGB-to-CMYK conversions. But the most promising advent for DSPs will be Apple's changeover from NuBus to PCI (Peripheral Component Interconnect) – slated for the next generation of Power Macs, around the middle of 1995. Apple claims the new PCI bus will transfer data four to five times more quickly than NuBus. Sources at Radius, one of the companies that plans to dive headfirst into the PCI market, expect the speed savings to be more moderate, in the neighbourhood of twice as fast. That's still good news for DSP, since the PCI bus will allow much faster data transfer between the DSP board and the CPU.

Dedicated hardware Imagician is a hardware-software package that processes pixels on a dedicated NuBus board equipped with its own 16MB of RAM. Designed primarily to prepare large scans for output or for enhancement in Photoshop, the software is limited to a few transformation and basic filtering functions. For example, you might use Imagician to rotate and sharpen an image and then export it to a different resolution on disk. Because the operations are handled by the board, 2,048-by-2,048-pixel images (that's 12MB for RGB and 16MB for CMYK) can be processed and exported to disk instantaneously. When processing larger images, Imagician reads in the most representative 16MB of image data for the screen display. When exporting the image, the program purges the data in RAM and then loads in and writes out the image in 16MB chunks, applying the number-crunching along the way. This is the reason that in Macworld Lab tests on a flat (single-layer) 50MB image, Imagician rotated the image in a split second – it's just changing the proxy in RAM – but took more than seven minutes to export the file in TIFF format, because the

program had to read and write the file to disk. At present, Imagician is far from rock-solid, and the board I looked at was incompatible with the current generation of Power Macs. (Macworld Lab was able to test a Power Mac-compatible board.) But MacEurope has a responsive group of programmers (the fix to a bug I found was on my desk three days after I pointed it out) and a program with a promising future. MacEurope plans to bundle its board and integrate its software with Fauve's xRes – a program that promises direct competition with Photoshop, Live Picture and Fractal Design Painter.

continues page 97

Collage 2.0



This image, created by Seattle-based artist Jeff Brice, appears in a promotional brochure for Collage. Brice began by scanning various diagrams and photos he'd taken. After making masks for most of the images, he loaded the images (with their masks) into Collage. Using Collage's low-res proxies, he was able to quickly and easily experiment with different shapes, positions and sizes, until he found a combination he liked. Collage's Transfer Methods allows him to quickly preview different ways of compositing images. This is especially useful for Brice, since he uses many layers – there are about 25 or 30 layers in this image.

He brought the face, the bottom layer, into Collage using the default Copy transfer method, that does not change the image; he added the smaller images around the face in Lighter transfer method. After inverting the diagrams in the image from black to white, Brice composited them in Lighten mode, which made the black surrounding areas disappear. He colourised the blue diagram by placing it in the mask layer and making the RGB layer blue; when he turned on the mask, the diagram became blue (he used the same technique for the red diagram). Once he'd placed all the images in various layers, he repositioned some of the layers to create unexpected effects, such as the diagram in the bottom left, which picked up its yellow colour from the photo fragment in the layer above it.

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A Vote in Favour of Proxies

A proxy is a stand-in that enables a program to communicate the various edits you make to the screen. Rather than applying every edit to the pixels in the original image – as does Photoshop – each of the other three programs uses its own system of proxies to protect the original image from the degenerative results that occur through editing.

Though the names and sophistication of the proxies vary – HSC, for example, prefers the term virtual image – the fact remains that not even a single pixel is affected in the original image. Collage relies on a simple 72-dpi proxy, making it difficult to accurately gauge changes made to large images. Imagician intelligently loads the most representative four million pixels from your image into the onboard RAM to create a high-resolution proxy. Live Picture's proxy system is based on its proprietary Ivue format. When you convert a TIFF image to Ivue, the program reorganises the image data for easy access, saving it in full resolution, 1/4 resolution, 1/16 resolution, and so on. The program then applies your edits to only the chunk of the screen image that is displayed at any one time. This intelligent proxy system permits you to judge precisely the results of your edits. In fact, Live Picture's display is every bit as accurate as Photoshop's.

A Forgiving Environment Both Imagician and Live Picture do a splendid job of providing you with visual feedback every bit as good as, and arguably better than, the proxyless Photoshop. Collage, on the other hand, leaves you guessing: zooming in on an image, for example, usually provides you with bigger pixels but not greater detail. Regardless of the program you happen to use, proxies make for an incredibly forgiving environment.

As any experienced user knows, one of the first things you have to consider when using Photoshop is the final size at which you want to print the image. When I'm creating a single-column graphic for Macworld, for example, I make fast work of reducing the image to 650 pixels wide. There's no sense in wasting time calculating edits on all those other pixels when no one will see them in the finished piece. The downside of this is that once I make this decision, I'm locked into it. If a reader writes to me with a request for a poster-size version of the image – as has happened – I have to break the sad news that the entire width of the artwork fits on a 13-inch monitor!

In a proxy-based program, you don't have that problem. You never have to consider the final resolution of your image until the very last step. Until then, you can juggle multiple high-resolution images, with few if any slumps in performance. You can scale an image down to a small size without sacrificing any pixels and rotate an image as many times as you wish without eventually turning it into jelly. In short, you can do whatever you want to the image, with no wear and tear on your fragile nerves (see "The Saving Grace of Proxies").

Rendering Collage, Imagician and Live Picture save your edits in a separate file from the original image, that takes up relatively little room on disk. A handful of compositing and transformation instructions takes up less than 100KB. Adding brush-strokes and masks in Live Picture can expand the file to a few thousand kilobytes. When it's time to proof the image, you must first export it in TIFF format. This process is roughly equivalent to rendering a three-dimensional drawing, requiring the application of mathematical operations to the original image. It takes only a matter of seconds to render a low-resolution image for proofing. When you have to

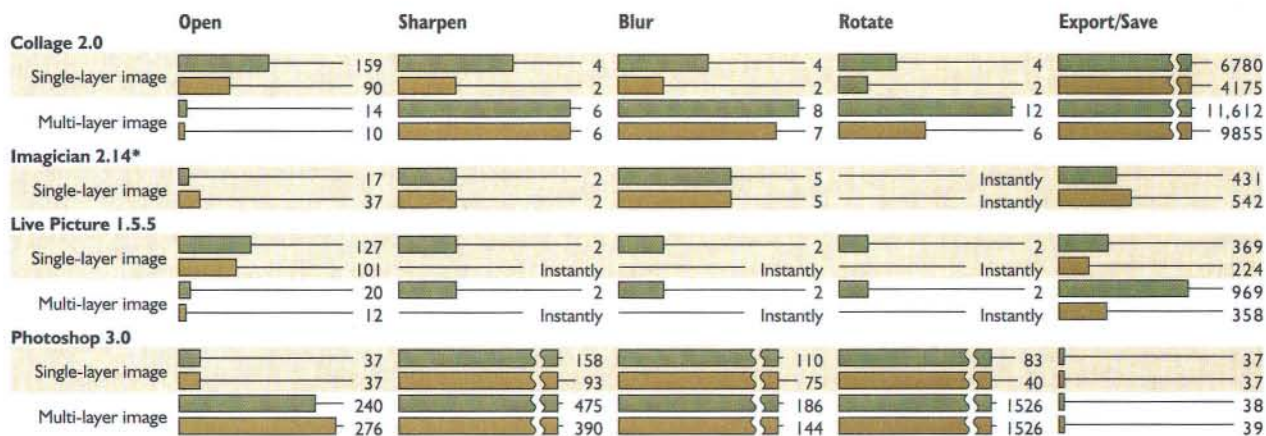
continues page 98



PUTTING IMAGE PROCESSORS THROUGH THEIR PACES

Times are in seconds. Shorter bars are better. Products are listed in alphabetical order.

■ 680X0 software on a Quadra 800
■ Native software on a Power Mac 7100



*No figures are available for multi-layer image because Imagician's layering features were not fully implemented in this version.

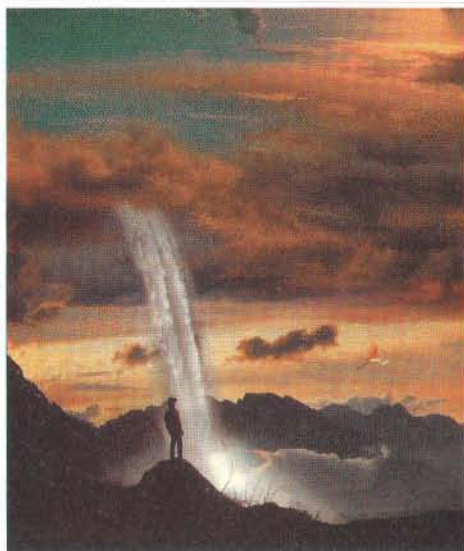
BEHIND OUR TESTS

To compare the performance of these professional image-editing applications, we chose operations common to all: opening a file, applying the Sharpen and Blur filters, rotating the image, and exporting to TIFF format. After configuring each application to use the optimum amount of RAM, we first tested each program's handling of a single-layer image – a 50MB 1000-dpi TIFF file. Next we created a multi-layer 200MB image from four separate files (each 1000-dpi and 50MB) that we imported into the application as individual layers and saved in that application's native file format. With the single-layer image, we tested the

open-file operation by measuring the time required to import the TIFF file into each application: with the layered file, we opened and tested the file in the program's native format. We tested Power Mac-native versions of the software on a Power Mac 7100 with 70MB of RAM; we tested the 680X0 versions on a Quadra 800 with 72MB of RAM. Each machine was equipped with an Apple 24-bit video board as well as two high-speed 1GB hard drives – one for storage and the other for scratch-disk space.

Macworld Lab testing supervised by Matt Clark

Live Picture 1.5.5



For this image, San Francisco photographer John Lund began by scanning several photos into Photoshop. After converting them to Live Picture's Ivue format, he created a new Live Picture file, where he inserted the photo of the Teton mountain range. He inserted the photo of a sunset and sized it to the same width as the previous photo, positioning it so it was overlapping the Tetons. Next he selected the eraser with a very large brush size to get a soft edge, so when he erased the overlapping portion of the sunset image, he would get a smooth transition between the two photos.

After sizing and positioning the waterfall photo, Lund used the eraser again – this time with a medium-size brush – to erase the parts he didn't want, leaving just the waterfall and some of the foreground. With the pen tool, he created a path around the egret; then, converting the path to a stencil with a soft edge set at a minimum feather, he sized it down and positioned it. Going back to the first layer (the Tetons), Lund used the Colour Shift command (Layer>Ivue Correction) to change the colours so that the sky in that image would match the sky in the sunset image. He changed the egret's colour to match the sunset as well. Next he went back to the sunset layer, duplicated it and used Colour Shift to change the duplicate's colours to blue tones. After erasing the entire duplicate layer using the Erase marquee, he selectively painted the blue image back into the areas of sky between the clouds.



render the real thing, however, you'll probably want to take a coffee break. Live Picture and Imagician rendered our files in anywhere between four and 16 minutes, depending on complexity and computer speed (see "Putting Image Processors through Their Paces").

Speed without the hardware Another benefit to proxies is speed. Because the program doesn't have to apply your changes to every pixel in the original image, it can save time by being selective in applying changes. Imagician is an exception in this case. By applying edits to all pixels in the relatively large 16MB proxy, the program forgoes the speed benefits of proxies and instead derives its speed gains strictly from the accelerated processing capabilities of the NuBus board.

Collage, on the other hand, is an example of proxies travelling in the fast lane. Edits go by quickly when

applied to 72-dpi proxies that contain only a fraction of the pixels in the original image. Unfortunately, Collage has to reload the image from disk if you undo a filtering operation. In Macworld Lab tests, for example, loading a 50MB TIFF file into a composition took 90 seconds on a Power Mac 7100; sharpening the image took only two seconds. But to undo the sharpening effect took another 90 seconds because it required loading the original image from disk.

Live Picture handles proxies nearly as well as you can imagine, applying your changes only to the part of each image that is visible on-screen. Undo operations

fly by in the blink of an eye, which begs the question: why doesn't the program offer multiple automatic undos? I hope we can look forward to such a feature in future versions.

Resolution Independence: A lot has been written about Live Picture's resolution-independent construction. So let me eliminate one element of potential confusion. Images converted to the Ivue format and imported into Live Picture have a fixed maximum resolution, just like images opened up in Photoshop. This means you can't import a 72-dpi scan and expect it to spontaneously transform into an infinite-resolution image. But everything else is mathematical, so brush-strokes, text and paths have no inherent resolution – just like their counterparts in Adobe Illustrator or some other object-oriented program. The same, incidentally, goes for text in Collage. Although you can't edit text in Collage to the same extent as you can in Live Picture, you can scale text without harming its resolution. Both products always work from the outline definitions of the characters.

The Last Word

If you were to purchase only one program, it would have to be Photoshop. Despite the program's relative lethargy when editing high-resolution images and its continued reliance on pixel-by-pixel editing, Photoshop provides more functions than do Collage, Imagician and Live Picture put together. It is the only program, for example, that lets you both view and edit independent colour channels, smear pixels across layers, generate layer masks spontaneously, clean up images using flexible cloning options, apply overlay modes to brush-strokes, and automatically isolate colours outside the CMYK gamut. Furthermore, Photoshop's colour-correction, selection and filtering capabilities are second to none.

For speeding up basic compositing operations, Live Picture is clearly more capable than Collage, but frankly, at £279, Collage provides the better value, offering overlay modes, channel-specific filtering and an interface that most users will take to without so much as a glance at the manual. But professional users will quickly find themselves frustrated by the program's low-resolution proxies and occasional slowdowns.

By contrast, Live Picture is superb at juggling and reflecting changes to high-resolution images. But for £3,495, I expect better automated masking controls, more precise filtering options, the ability to edit any layer while viewing the entire composition, multiple levels of undo, and a more streamlined working environment that doesn't require you to apply a new layer for even the slightest adjustment to an image. However, if you're willing to trade an imperfect working environment for real-time editing, Live Picture is the only show in town.

Imagician has potential and is useful for applying quick transformations to high-resolution scans, but the product is presently too expensive and too unsteady to merit attention from budget-minded users. Imagician may become a viable solution, however, if and when it's bundled with xRes, particularly since xRes is supposed to merge the functionality of Photoshop and Painter with the speed and worry-free working environment of Live Picture – all for the price of Photoshop. Frankly, it sounds too good to be true, but it's refreshing to hear that at least one company isn't assuming you'll also be using Photoshop. **M**

Deke McClelland is a Macworld contributing editor and the author of several books about high-end graphics programs. His most recent book is Macworld Photoshop 3.0 Bible (IDG Books Worldwide, 1994).

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Live Picture, Specular Collage and Imagician provide their own unique advantages, and any of the three may prove a valuable addition to your software library. But there's only one image editor you absolutely need.

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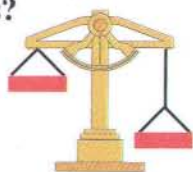
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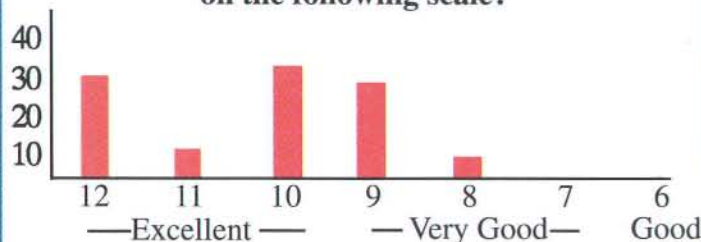


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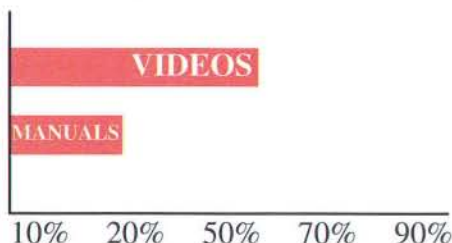
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Expert Graphics

Graphics professionals share their secrets.

By Cathy Abes

Artist: John Lund is a photographer, based in San Francisco, who specializes in digitally-enhanced photography. He has lectured on digital imaging at numerous graphics-industry conferences, including Macworld Expo, Seybold San Francisco and Viscom West. His work has appeared in such publications as *Popular Photography*, *Professional Photographer*, *Computer Artist* and *Publish*. Lund's advertising clients have included Adobe Systems, Apple Computer, Hewlett-Packard, and IBM.

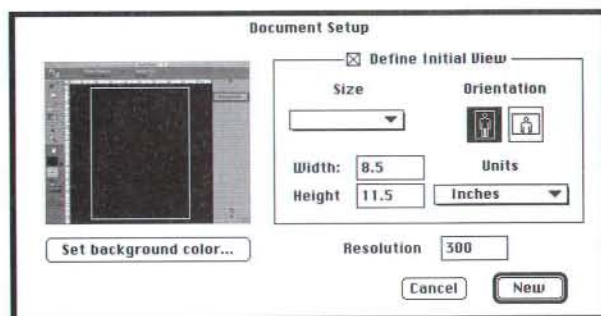
How It Was Done: Lund began by scanning in five of his photographs: two cowboys on horseback, a herd of horses, the Teton mountain range (these three photos were taken near Jackson Hole, Wyoming); a cloudy sky (shot in Santa Fe, New Mexico); and Lake Tahoe.

Lund first defined a view for the final image in Live Picture's Document Setup window. After inserting the photo of the sky as the first layer, he used Live Picture's Colour Correction command to change the sky's colour from blue to turquoise. Next he inserted the photo of the cowboys as the second layer, sized and positioned it, and used the eraser to delete the areas of the photo above the cowboys. He then added a Sharpen/Blur layer, where he used a brush to selectively apply sharpening to the cowboys.

Lund then inserted the photo of the horses as the fourth layer, set the opacity to zero and painted in the horses. After painting in the mountains (the fifth layer), he used the Colour Control command to boost contrast. Next, he added an Image Clone layer to repeat part of the mountain range on the left-hand side of the image.

After painting the image of Lake Tahoe into the foreground below the riders as another layer, Lund added a Colour Correction layer to boost the saturation. Once he created the final image as a TIFF file, he opened it in Photoshop where he carried out some clean-up work, cloning out unnecessary areas of the image.

1 Live Picture's Document Setup window, where you can define the initial view of your image by setting its proportions, resolution, orientation and background colour.



2 The original photo of the sky with clouds, which became the first layer of the image.



3 The sky after Lund used Live Picture's Color Correction command to make it a deep turquoise.



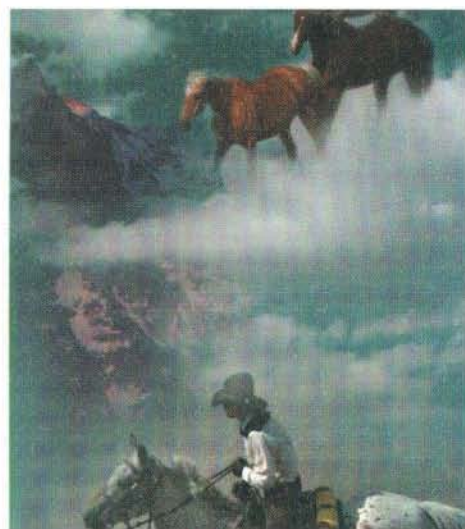
4 The result of inserting the photo of the cowboys into the image as the second layer.



5 Lund inserted the horses photo by setting its opacity to zero (making it completely transparent) and painting it into the image with a medium-size brush.



7 To clone the mountains, Lund first added an Image Clone layer (Create>Image Clone), then option-clicked on the area he wanted to clone from, dragged to the destination area and started painting them in.



8 After adding a Colour Correction layer (Create>Colour Correction), Lund increased the saturation by 50 per cent and applied it to the entire image.



6 Using the Colour Control command (Layer>Ivne Correction>Colour Control), he increased the contrast in the mountains by manipulating points on the colour curve.

THE TOOLS

Hardware: Macintosh Quadra 950 with 140MB of RAM, 1.6GB internal hard drive and DayStar Digital PowerPro 601 accelerator board with FastCache PowerPro daughterboard; Quantum 1.2GB external hard drive; SuperMac Thunder/24 accelerated graphics card; Relax Technologies 44MB SyQuest removable cartridge drive; SuperMac SuperMatch 21 color monitor; Wacom 12-by-12-inch graphics tablet.

Software: Live Picture 1.5; Adobe Photoshop 3.0.



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see listings for prices

Marathon

The long awaited all action game is finally here. This is the Mac's very own Doom-killer. Don't miss out on the action game of 1995. Superb graphics and game play. Requires reasonably fast Mac - this game is worth upgrading for! Now where did I put that rocket launcher...

Sim Tower - it's here already!

From the makers of Sim City 2000! Design & build the ultimate Tower, combine businesses, utilities and apartments but look after your tenants or they'll leave. Day/Night animations.



SHAREWARE

If you believe that data transfer over the Internet is definitely, absolutely, completely safe then welcome to the real world where data encryption rules.

By Sue Schofield

Data

How to avoid prying eyes

Write a book, and the inadequacy of today's 'professional' personal computer users hits you hard. My first lofty tome was bugged by an idealistic and neophyte editor, who told me to go buy a Mac "because that's what all the creative people use". Months later he turned his nose up at the hard-won copy on Mac disks because he'd just bought a 486. Book Two looked like it might fare better: both the publisher and the typesetter had Macs, although when the second edition came round, neither the publisher nor the typesetter could export the original text out of Quark Express. A combination of a venerable version of Quark at the publishers, the date (the last Friday afternoon before Christmas) and a Mac operator who couldn't operate a Mac conspired against the technology being of any use.

None of this has much bearing on this month's column, which is ostensibly about data encryption and data privacy. Data encryption looks set to enter the sleepy world of book publishing, because more publishers are learning that the Internet might just come in handy for flinging files across the oceans, across computer platforms, or from Wokingham to Bath. UK magazine publishers have been wired for years, and even Editor Worlock has finally got the hang of a modem.

Book publishers, along with purveyors of everything from aardvarks to zebras, are currently showing a lot of interest in the Internet, mainly for the free marketing it offers to a captive audience, but also as a transport mechanism for mailing around wieldy stuff like book texts. Despite appearances in the finished versions, the text and screenshots for your average 300-page computer book will fit onto three floppy disks. That's, say, around three megabytes of space, once you've squashed everything down with Stuffit into a SEA file, which is quite capable of being squirted around on the Internet.

Suddenly, it's dawned on many publishers that the Digital Dirt-track is much cheaper than DHL, and works world-wide, even on the Friday afternoon before Christmas. Unfortunately the number of Mac-savvy people at UK book publishers who know how to create a SEA file and operate an Internet connection can be counted on the fingers of one foot. Then there's always the tricky issue of the Internet's unrivalled ability to convince the rest of the world that it's a haven for thugs, hackers, father-rapers and computer journalists. According to some, mail the unprotected text of Schofield's "Zen and

the Art of Derivative Book Titles" over the 'Net, and it will be trawled through the electronic mire of the Alt.media Newsgroups within minutes.

Enigma Variation

Enter 'Enigma', a Shareware program that provides data encryption, file collation and the creation of encrypted self-extracting archives. It could have been custom-designed for cack-handed computer neophytes; amateur pre-press agencies, publishers, self-employed computer consultants and similar. Anyone sending commercial data over the Internet would be a mug if they believed that electronic mail and file transfer over the Internet is secure.

Enigma attempts to fill the hole created by an Internet which is, by and large, completely unsuited to the mailing of sensitive data. In its unregistered form, Enigma uses an encryption algorithm based on a thirteen-letter key to encrypt a Mac text file into a seven-bit representation of itself. Register the product and you get limited DES encryption. As the author points out, the unregistered version of Enigma provides a degree of security which he estimates will take a Mac LCII about a day to crack using brute force methods. Readers with a PowerMac might like to extrapolate from there.

If you do register your version of Enigma you'll get access to a limited version of the much-discussed Data Encryption Standard. This was developed in the early '70s by the USA National Bureau of Standards and the National Security Agency, with the purpose of providing a standard method of securing commercial information. IBM had a paw in the first implementation and called it Lucifer, for no good reason.

DES is pretty good at encryption. It works by bit-shifting and substitution controlled by the encryption key, and by repeating a number of operations to achieve a high degree of difference from the original. A registered version of Enigma uses a 32-bit key (instead of the 56-bit key used on the full version) and runs the iterations only four times instead of the normal sixteen. This gives about a one in two billion chance of the key being discovered by

continues page 106



accident. A Mac LCII would take about a million years to crack a 56-bit key-encoded file, a little less for the 32-bit encoding of Enigma. One other estimate using a Cray super-computer comes up with a 3,000 year operation to crack those 56-bit encoded DES files.

Enigma does a lot of other useful stuff, such as compacting multiple files and BinHexing them ready for transport. It's cheap to register at twenty dollars and provides a degree of protection for your data which is unlikely to be broken by owners of personal computers. Unfortunately, if you forget your password then there's no way to get your data back. This is either the perfect attribute for an encryption program to possess, or indicates a lack on the part of the author. Most commercial programs allow company techies to access a back door and get at the data. Enigma doesn't, and is presumably even more secure for that reason.

Guide to Mac Shareware Sources

Mail Order CD-ROM Suppliers

Kimtech: 01202 888873 (Catalogue Available)

Optech: 01252 714340 (Catalogue Available)

Config.Sys: Ohio-based mail order company that ships to the UK at good prices. Mail joe@config.com for an electronic catalogue.

Dial-Up Systems (Commercial)

CIX: 0181 390 8446 (voice); 0181 390 1244 (data). Average selection of Shareware and PD files, plus support. Files on CIX are uploaded by conference users. Many of them come from other sources such as the Internet and CompuServe, so you can generally get the file you want on CIX even if you have to ask and wait for it.

CompuServe: 0800 289458 (voice). Over 23,000 Mac files at the last count, plus support. Also Mac Shareware registration via SWREG. Probably the largest (non-Internet) supply of Mac Shareware available to UK users. CompuServe also provides on-line support for many Mac commercial products and Shareware Authors can, and do, upload new files there first. There's also Ziff-Net on CompuServe, where for an extra fee you get access to custom-shareware written only for that forum.

Eworld: 0800 896206 (voice). Apple's answer to Compuserve. Eworld provides a virtual town for you to explore. Shareware provision is pretty good, but Apple's Global Eworld has a decidedly American feel. At the moment, Eworld seems to be occupied mainly by Mac journalists.

Mactel: 01602 455121 (voice); 01602 455444 (data). Traditional Bulletin Board with a graphical front end. Plenty of software and online CD's.

Internet ftp sources

ftp.apple.com	sumex.aim	mac.archive.umich.edu
nic.switch.ch	ftp.apple.support.com	mac.archive.umich
newton.sys.uea.ac.uk	newton.uiowa.edu	src.doc.ic.ac.uk

Usenet

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comp.sys.mac.advocacy	comp.sys.mac.announce	comp.sys.mac.app
comp.sys.mac.apps	comp.sys.mac.comm	comp.sys.mac.databases
comp.sys.mac.digest	comp.sys.mac.games	comp.sys.mac.graphics
comp.sys.mac.hardware	comp.sys.mac.hypercard	comp.sys.mac.misc
comp.sys.mac.oop.macapp3	comp.sys.mac.oop.misc	comp.sys.mac.oop.tcl
comp.sys.mac.portables	comp.sys.mac.programmer	comp.sys.mac.scitech
comp.sys.mac.system	comp.sys.mac.wanted	

Mac Internet Access software

<ftp.demon.co.uk>

PD Software Suppliers

Kingsway computer: 01742 750 623 (Catalogue Available)

User Groups

National Mac user Group Council: 0171 690 2904

Two niggles. America classes DES encryption as 'munitions' and doesn't allow export. So if you download Enigma from CompuServe's Mac Applications section, are you going to be visited by men in shades? The other novelty is a typical personal computer Catch 22. DES-icate your file and no-one else can read it. That includes the recipient. You'll have to mail them the decode key via un-encrypted email. But that's life on the Internet.

Back-Door Mania

There's been a lot of discussion about the possibility of a back-door into DES, mainly because it was developed by, and for, America's National Security Agency. The concerns are amplified because DES is a relatively old standard and was developed during the cold war in the Seventies. Then it would have been unthinkable to release a National Standard (which is what DES has become) to which the NSA didn't have full access. So far no-one's yet proved or disproved that the NSA are decrypting DES mail messages on the Internet, but commonsense would declare that your emails to Auntie Flo are relatively safe from the prying eyes of America's spooks.

The Back Door School of Paranoia provoked Phil Zimmerman into producing PGP - Pretty Good Privacy. PGP lets you publish a key for other people to use. Mail senders then encrypt a file with your public key. On receipt you decode it with your private key. (The public key only works for encode.)

The non-commercial PGP programs are hot news, mainly because they are capable of winding the Internet community into apoplexy over the issue of Encryption for the People, but also because Zimmerman is about to dragged through the US courts for his efforts in bringing spook-proof documents to the masses. At the moment, the Mac PGP program is a heap of command-line dingo-doo-doo, but a group has formed to gestate a proper clicky-button version. Mail qwerty@netcom.com with Subject "Bomb me!" for Gary Edstrom's PGP FAQ and a free "Here's How to MacPGP!" guide. Both of these are also available from <ftp.netcom.com> in [/pub/qwerty](ftp://pub/qwerty). There's a full discussion of Zimmerman's travails, and the squidgy bits of data privacy in the alt.security.pgp, sci.crypt, comp.sys.mac.programmer along with the comp.org.eff.talk newsgroups.

A kick in the Ars

Over to encryption of another kind. Shareware program 'Ars Magna' encrypts perfectly ordinary words into perfectly ordinary anagrams. Run Peter Worlock through Ars Magna and he becomes 'Poor Wet Clerk'. Sue Schofield becomes 'Defies Slouch', Macworld becomes 'Calm Word,' or - if your subscription doesn't arrive on time - 'Warm Clod'.

While toying with the program instead of trying to get the copy in on time, I entered a generic Mac product that gave me the anagram 'Misanthrope Cow'. If you decode the answer why not send it to Apple UK? That way you might get them to lend you said product. I've been trying to get one for a year, so anything other than sending begging letters to Apple's PR-Oids might stand a better chance of success. Not being a Mac journalist or having anything to do with promoting Mac products might also help. Ars Magna is in the CompuServe Mac Applications forum, as are a stack of other shareware novelties. On the other hand, Misanthrope Cows are by all accounts, rarer than rocking horse feathers.

Sue Schofield is taking a few months out to write "How to be a computer-free Mac journalist". Mail her at sue@s-sco.demon.co.uk: no anagrams, please.

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540 12/240 & modem	£2450
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Audio Vision 14" Colour Display and cable kit	£340
Apple Multiple Scan 15" Display	£290
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DTP & PRESENTATION

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Caere Omnipage Direct	£156

INTEGRATED PACKAGES

Clan's Works	£155
Microsoft Office 4.2	£335
Microsoft Works	£95
Wordperfect Works 1.2	£142

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Adobe Dimensions 2	£142
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Adobe Illustrator 5.5	£355
Aldus Pagemaker 5	£475
Aldus Freehand 4	£300
Aries Font Manager	£75
Aries Font Minder	£64
Claris Works	£158
Claris Draw	£238
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Farm Z 2.2	£1200
Letra Studio 2	£160
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Pixar 128 CD	£180
Quark Xpress 3.3	£679
Soft Window	£233
Typestry V2	£167
Vista Pro	£75
WordPerfect 3	£115
PowerBook Duo 230 4/120	£895
PowerBook Duo 250 4/200	£1325
PowerBook Duo 28 4/200	£1600

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APPLE

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Portable Stylewriter	£264
Colour Stylewriter Pro	£399

CANON

BJ 230 (Ideal for A3)	£243
BJC 600 (A4 Colour)	£649
BJC 820 (A3 Colour)	£1230

EPSON

Epson Stylus Col 720 dpi	£369
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Deskjet/Deskwriter 310 Colour kit	£28
Deskjet/Deskwriter 320	£175
Deskjet/Deskwriter 320 + ASF	£265
Deskjet/Deskwriter 520	£205
Deskjet Deskwriter 550 C	£295
Deskjet/Deskwriter 560 C	£399
Deskjet 1200 C	£915
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After Dark 3	£65
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Stacker	£58
Stuffit Deluxe 3	£59
Stuffit Spacesaver	£30
Suitcase 2.1	£44
Super Doubler	£61
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Translate It French	£65
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Underware	£25
Virex 5.04	£58
Wiz Tools	£60

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Porta

Upgrading your PowerBook

PowerBooks were designed for three kinds of standard upgrade: more memory, a higher-capacity hard drive and a modem. But other, less routine upgrades are also possible, so let's focus on these.

Processor Upgrades

Nearly everyone wants a faster computer, and the obvious route is through a faster central processing unit (CPU). The most common method boosts the system clock without changing the CPU itself. The PowerBook 140's 16MHz CPU runs at 25MHz, and a 25MHz processor increases to 33MHz. The cost, depending on the model, ranges from \$250 to \$400 – dollars because most of the companies that handle upgrades have no UK distribution. Although a boosted CPU runs faster than its rated speed, upgrade vendors report very few problems.

Digital Eclipse Software (0101 510 547 6101) and Dynamic Engineering (0101 408 336 8891) offer clock boosts for PowerBooks that you send to them. Alternatively, Digital Eclipse can send you a replacement processor board that you can install yourself. You then return your old processor board to Digital Eclipse for credit. Bottom Line Distribution (0101 512 892 4070) also offers a clock boost, but only for the 140 and the Duo 210.

Dynamic Engineering can boost any PowerBook that has an 030 CPU, including Duos and other models with a 33MHz 030 processor. Dynamic says nearly all such PowerBooks will run at 37MHz, more than half reach 38MHz, and 10 to 15 percent make it to 40MHz. Price depends on the final speed, with a minimum of \$100.

Dynamic is considering offering a 33MHz 030 upgrade for the PowerBook 100. A faster processor will make an external battery almost a necessity for the 100, and this would offset the machine's light weight. The 100 is quite difficult to upgrade, since a new processor requires a new circuit board with the ROMs transferred from the old board, which would make it costlier than other 100-series upgrades.

Of all the 030 PowerBooks, only the Duo 250 and 270c are upgradable to an 040 processor (to a 280 and 280c, respectively) – and not in the UK! For the PowerBook 520 and 520c with a 25MHz LC040 processor (which lacks a floating-point unit; see below), Dynamic Engineering offers its \$449 CPU 33+ upgrade to 33MHz operation. At press time, Dynamic Engineering was testing for possible speed boosts to the Duo 280/280c and PowerBook 540/540c, which normally run at 33MHz; contact the company directly to get the test results.

Apple says that its PowerPC upgrade for all Duos – including the 210 and 230 – and 500-series models will be available in the first half of 1995. The RAM cards and modems in existing Duos and 500-series PowerBooks will be usable with the PowerPC upgrade as long as they meet

Apple's specs: most do. A PowerPC upgrade provides a much greater performance increase than any clock boost, providing you use Power Mac-native software. Software designed for a 680X0 CPU will run faster on an 040 Mac than it will on a Power Mac. PowerPC upgrades for 100-series PowerBooks are technically possible but unlikely, given the cost and difficulty of retrofitting such old models.

Do CPU Upgrades Make Sense?

Going from 25MHz to 33MHz is a 32 percent speed improvement. If you work purely from a RAM disk that contains a System Folder and applications, you will get the full 32 percent. But if you allow for the hard disk – which still runs at the old speed – the net improvement is typically about 20 percent: useful but not significant. Going from 33MHz to 38MHz is a mere 15 percent boost.

A faster processor consumes more power; if you double the speed, the CPU requires four times the power. Fortunately, processor cycling minimizes power consumption. Nevertheless, if you boost the clock, you should also get higher-capacity batteries.

The PowerPC upgrade significantly boosts performance, but the other clock boosts are far more modest. Boosting a PowerBook does not add proportionately to its resale value – you'd be better off selling your PowerBook and buying a newer model that's likely to offer additional features as well as a faster processor.

Floating-Point Units

A floating-point unit (FPU), also called a maths coprocessor, speeds up some mathematical calculations. Few programs need an FPU; even spreadsheets gain little, unless you frequently use trigonometric functions. Maths programs gain the most from an FPU; CAD (computer-aided design), 3-D modelling and rendering are rarely carried out on a PowerBook. You can have a 68882 FPU chip added to a PowerBook 140, 145, 160 or 165 (the 165c, 170, 180 and 180c already have one; the 145B has no space to add one). Both Digital Eclipse and Dynamic Engineering will install an FPU – usually as part of a processor boost – for an additional \$70 or so.

The 030 Duos (210, 230 and 250) can use an FPU installed in the full-size Duo Dock and Duo Dock II (the Duo 270c has a built-in FPU) but the docks are hardly portable. For \$349, Sigma Seven Systems (0101 604 743 2416) hand-solders an FPU inside the Duo, the Floppy Drive Adapter or another small dock. Installation in a dock means you don't have to modify the Duo itself and preserves its warranty; the small docks are cheap enough that their warranties don't matter.

The 040 PowerBooks (280, 280c, and 500-series) have an LC040 CPU, which lacks an FPU. If your software needs an FPU, you have three choices:

ble



If you own a PowerBook or Duo, perhaps it's time to consider upgrading the processor or screen.

By Cary Lu

Promotion

■ Unsolder the LC040 and replace it with a full 68040, which includes an FPU in the single chip (this voids the PowerBook warranty). There are no technical problems aside from somewhat shorter battery life; Apple's ROMs already support a full 040. According to Apple, though, only the 25MHz LC040 CPUs (the 520 and 520c) are candidates for replacement; a full 040 on the 33MHz models would exceed Apple's heat-dissipation guidelines – and the PowerBooks have no space for a fan or larger heat sink.

■ For under \$200, Sonnet Technology (0101 714 261 2800) puts an FPU on a PDS card for 500-series PowerBooks. The card fits in the left-side battery compartment, so you cannot use a second battery or a PCMCIA adapter while the card is in place. An LC040 combined with a 68882 is a non-standard configuration that may not work with all software.

■ SoftwareFPU 3.02, a readily-available shareware program, makes applications think that an FPU is present, but it does not speed up mathematical calculations. The early LC040 Macs were not compatible with SoftwareFPU; newer ones should be OK. SoftwareFPU also works on 030 Macs that lack an FPU, including PowerBooks.

Screen Upgrades

For the PowerBook 520, 520c and 540, Apple offers upgrades to the colour active matrix screen of the 540c – but you'll pay plenty and only get a new screen: the CPU speed does not change. For other PowerBooks, screen upgrades are not usually practical. Apple does not supply active matrix screens – monochrome or colour – as service parts. Two years ago, Newer Technologies showed an active matrix colour screen upgrade for the 170. Although one magazine described the screen as "currently shipping," only one prototype was ever made – and it was stolen.

The PowerBook 140, 145 and 170 lack a video port for an external monitor. Only Power R (0101 206 547 8000) still offers a direct connection: its \$299 model PB-10, which adds a half-pound external box and supports a black-and-white (1-bit) VGA display in mirror mode only (the internal and external monitor show the same image).

Discontinued internal cards from Envivio, Mirror and Computer Care support a range of colour monitors. And you can still find the sluggish video adapters that connect to the SCSI port. Note that none of these video interfaces work with a PowerBook 150. In reality, there is only one good way to get video if you have an older PowerBook or a 150: sell it and get a model with a video port.



Battery Upgrades

If you have an older 100-series PowerBook, you can get higher-capacity batteries and heavier-duty AC adapters. Apple shipped 24w AC adapters with the 165c and 180c; they charge faster than the older 15w and 19w adapters. Exception: the PowerBook 100 and 150 should use a 15w or 17w adapter as higher-power adapters may cause damage. The Duo 1.5-amp AC adapter – supplied with the 270c, 280 and 280c – charges faster than the 1.04-amp adapter supplied with older models. Owners of 500-series PowerBooks should get updating software, such as the \$10 EMMpathy from VST Power Systems (0101 508 287 4600) and Battery Utilities 500 Lite from Lind (Computers Unlimited, 0181 200 8282), to fix common problems with batteries. Apple plans to release its own battery-update software.

Cary Lu is a Macworld contributing editor who covers mobile- and remote-computing issues in this monthly column.

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Your favourite program's just been upgraded – do you take the plunge and if so, what are the possible pitfalls?

By Jim Heid

Upgrade Blues

Hints and tips for software survival

When you think about upgrading your Macintosh, you probably think of getting new hardware (for an in-depth look at hardware upgrades, see the main feature in this issue). But the big reason for upgrading hardware is to keep up with new software. When a new version of a favourite program comes out, it almost always demands more hard disk space, more memory and more processing punch. Software evolution helps to drive hardware evolution, while evolving hardware allows new software to be used.

Using the trusty cheque book is only part of the price you pay for participating in this evolutionary process. Upgrading software leads you through a minefield of potential problems. Is the new version compatible with your hardware and system software? Can it convert your old documents accurately? How long will it take to learn the new features? And how many bug-fixes will ship before the new version really works?

Upgrade confusion is always a burning issue, but lately it has become white-hot: Microsoft has released upgrades for Word and Excel – the Macintosh world's two biggest-selling programs – and numerous other companies have shipped new versions of widely-used programs in the last few months. Power Mac support is the big reason for many of these upgrades, and the Power Mac's significant differences bring their own considerations to the upgrades table.

This month I'll help you pass safely through the software-upgrade zone. I'll provide some upgrade-survival tips for Microsoft Word 6.0 and Excel 5.0 – the programs most business users must come to terms with. Most of the concepts apply to other programs as well.

Making Room on Disk

Like people, software tends to put on weight over the years. Microsoft Word 1.0 ran on a Mac with two 400K floppy drives; version 6.0, by comparison, ships – in compressed form – on ten 1.4MB floppies! One way to fit massive new versions on your hard drive is to get a bigger drive; not only are hard disks that hold 500MB or more able to accommodate today's bloatware, but they're also faster than the smaller drives most Macs ship with.

If your bank account barks at this option, configure the upgrade's installer or set-up program so it doesn't install unnecessary extras such as sample documents, templates, file-conversion filters and help files (see "Smaller Installer" screenshot).

Take Word 6. The Typical install option needs some 13MB of disk space (15 MB if Power Mac), much of it for files you may never need, while the Compact option requires only 5MB (8MB on a Power Mac). You can also start out with the Typical installation and later purge pieces you don't use.

By the way, you should turn off system extensions before running an installer, because extensions such as virus-protection utilities can interfere with the installation. (To turn them off, restart your Mac with the shift key held down until you see "Extensions off" below the "Welcome to Macintosh" message.) As programs balloon, however, many are shipping on CD-ROMs, and your CD-ROM drive requires its own extension to run; if you disable all extensions when restarting, the CD won't mount. The only solution is to disable all but the CD-ROM drive extensions (some drives have more than one). That means you can't use the shift-restart trick, and this calls for an extension manager – either the Extension Manager control panel included with System 7.5, or a third-party product such as the shareware program of the same name.

Defaults and Dictionaries

A program you've configured and customized over time can feel as comfortable as an old pair of shoes. A new version, with its unfamiliar interface and different keyboard shortcuts, can give you digital blisters until you get used to it – or modify it to work like the old version. With many programs, you have to make those changes manually, but Word and Excel spare you from some of this

continues page 112



ILLUSTRATION: GRAHAME MURDOCH
Created in Adobe Photoshop,
Illustrator & Dimensions using
a Centris 650 24/230



A new version, with its unfamiliar interface and different key shortcuts, can give you digital blisters until you get used to it – or modify it to work like the old version.

Smaller Installer

You can save disk space by using the installer's option to leave out some components such as help files and templates – as in Word Perfect.

labour. Word 6 can open and convert the settings file that held your Word 5 configuration. Set Word 6's Open command to All Files (from the List Files of Type pop-up menu). Then double-click on the Word Settings (5) file, which is stored in the Preferences folder of the System Folder. Word 6 will offer to merge the settings file's options into the default template, called Normal. You'll have to do some minor tweaking to any custom menu settings you created, but you'll have a big head-start.

Excel 5 doesn't have a similar feature, but you enter familiar territory by switching to Excel 4 menus: choose Options from the Tools menu, click on the General tab, and check the Microsoft Excel 4.0 Menus box.

To use your Word 5 custom dictionaries with Word 6, choose Word 6's Options command, click on the Spelling tab, click on the Add button and select your old dictionary files. (Word 5 stores custom dictionaries in the Word Commands folder inside the Word folder.)

Compatible Conversions

Recreating preferences can be simple when compared with converting documents created with an earlier version of a program. When developers add new features to an application, they often change the program's file format – the way it stores information about a document's text, graphics and formatting – so that the document can contain work you do using features new to the version. This file-format evolution can mean more work or worse when you open older documents with the latest version.

Most new software versions open older documents as new and untitled, so encouraging you to save it in the new version's format. That's well and good, but it means you're likely to have two copies of each document on your hard drive. Some programs let you save over the older version to eliminate the duplicate, but many do not.

Word 6 handles old-document conversion with a bit more elegance: if you open a Word 5 document, it opens with the original file name intact. If you subsequently choose the Save command, Word 6 displays a dialogue box asking if you'd like to retain the Word 5 format or save the document in Word 6. Unfortunately, this dialogue box appears every time you choose the Save command, so you might just want to throw in the towel and switch to the Word 6 format – you'll have to anyway if you want to use any of the new features, such as revision tracking. Excel 5's document-conversion process is similar.

Subtle differences can still surface; in Word 6, for example, small caps are smaller than they are in Word 5. And last year, Aldus seriously upset many PageMaker 4.2 users when it changed the character-spacing tables for PageMaker 5.0. Both of these changes can affect line endings and page breaks of converted documents. As these examples illustrate, upgrading your software halfway through a big project is asking for trouble. Stick with the old version until you reach a natural stopping point.

When you upgrade an application and delete the older version from your hard drive, double-clicking on an old document may give you the "application not found" message. All documents have invisible file-type and creator codes that tell the Mac which application is appropriate for a particular document. If the application's type or creator codes differ from the older version's, the document won't recognize it. The work-around is to open older documents from within the new version or to drag the older documents to the new version's icon.

If you import documents into other applications – for example, Word files into PageMaker – you may encounter another document-format hurdle. Programs that import foreign files usually rely on converters or filters (files that describe a foreign format so the application can interpret it). If a program's file format changes, you'll need new converters to import its documents, and the converters may not be available right away. For example, as of this writing, neither Adobe nor Quark have released a Word 6 import filter. Until they do, save Word 6 documents either in Word 5 format or in Word 6 for Windows format – or stick with Word 5.

In the business world, document conversion usually means supplying files in a format your colleagues or clients can use. Again, until converters for the new version of a program become available, you'll need to fall back to a previous version's file format (for example, WordPerfect 3 can open Word 5 documents).

Power Mac Particulars

If you've recently acquired a Power Mac, you're probably in the process of upgrading your software library to native-mode versions. That has its own problems. The main issue to consider is whether you'll be able to run your Power Mac software on 680X0-based Macs. If you use both types of Macs, be sure the upgrades include native-mode and 680X0 software. Many programs do include both, but for some you have to choose one or the other.

If you swap a hard drive or removable-media cartridge between a Power Mac and a 680X0 Mac, install fat-binary versions – that is, versions containing both native and 680X0 code – of your software. If a program supports a fat-binary install, this option is offered by its installer. You may have to choose a Custom Install option to access it, however; the Easy Install procedures generally install only the code for the machine the Installer is running on.

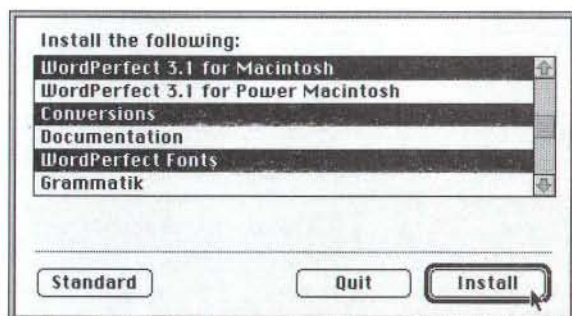
The Bleeding Edge

Once you've dodged the configuration and compatibility land mines and installed a new version, the real work begins: learning how the upgrade differs from its predecessor and mastering its new features.

Clearly, treading the software upgrade path can be a walk on the wild side. The easiest solution, of course, is to stick with the versions you're using. I know many casual Macintosh users who do exactly that: their Mac SEs work fine with Microsoft Word 3.1 and MacDraw II 1.1. But if you're a Macworld reader, chances are you're not a casual user, so not upgrading isn't a viable option.

Still, waiting to see if bug reports surface is the best approach. Unfortunately, many software companies, in their zeal to cash in on the lucrative upgrade market, discourage waiting by offering discounts to early upgraders. In this case, a better approach might be to install the new software but retain the earlier version, being careful not to save old files in the new format until you're satisfied with the new version (converting files from older to newer formats may be messy, but converting them back can be impossible). Get used to the new version over time, using it with less-critical projects at first. If a maintenance release is issued, make sure you get a copy – it's usually free. (Also check the company's on-line support forums for minor updates.) Staying informed is the best way to survive in the software-upgrade minefield. **M**

Contributing editor Jim Heid is the author and producer of the best-selling Macworld Complete Mac Handbook Plus Interactive CD, third edition, and the Macworld Ultimate Mac CD-ROM (both published by IDG Books Worldwide, 1994).





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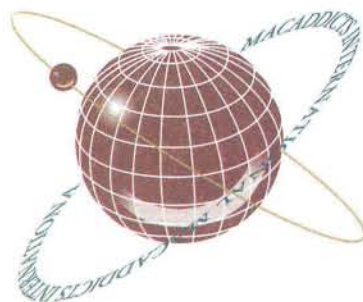
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QUESTIONS & ANSWERS

SYSTEM BREAKOUT

TIP: In case you haven't discovered System 7.5's unique form of the classic game Breakout, here's how to start it from SimpleText: Type the words "secret about box", highlight them and drag them to the desktop (creating a clipping file). The game window appears, listing the names of the people who brought you System 7.5. You can start the game by dragging the secret words from any application that supports System 7.5's drag-and-drop editing including Stickies, Scrapbook, Note Pad and WordPerfect 3.1.

Steve Fenton

BROKEN SUBMENUS

Q When I choose an individual control panel from the submenu in System 7.5's Apple menu, the System Folder opens instead of the control panel I chose. Other submenus in the Apple menu seem to work fine.

Scott Francis

A When a problem like this occurred in the pre-release versions of System 7.5, I fixed it by opening the Apple Menu Items folder, dragging the Recent Applications folder to the desktop, waiting a few seconds for the Apple menu to be updated and then putting the folder back. You might want to give this a try.

In the released version of System 7.5, the Apple Menu Options

control panel doesn't always show submenus for every folder (or folder alias). You can often fix several problem folders by dragging one of them to the desktop and back.



If these procedures don't work, your problem may be caused by a conflict between System 7.5's Apple Menu Options control panel and another control panel or extension. Certainly your System Folder should not contain other software that creates submenus in the Apple menu (for example, Now Menus or Kiwi Power Menus). The Safe Install program, which comes with System 7.5, identifies some items that might be in your System Folder and that conflict with standard System 7.5 extensions and control panels.

To test for other conflicts, restart your Mac while holding down the spacebar until the Extensions Manager window appears. In this window, choose "System 7.5 Only" from the Sets pop-up menu;

then close the window to resume start-up. If the problem goes away, then one or more of the unchecked items in the Extensions Manager window conflict with the Apple Menu Options control panel. You can determine which items are troublemakers by a process of elimination using Extensions Manager. For more information on Extensions Manager, look up extensions in the Macintosh Guide (listed in System 7.5's Help menu).

If all else fails, try a clean install of System 7.5 as described in last month's Quick Tips (and in the manual accompanying the System 7.5 upgrade kit).

POWER MAC AND 680X0

Q What about the poor soul who wants to use fast native software on a Power Mac but also wants to run the same programs on a 680X0 Mac such as a PowerBook? Is this person going to have to buy two versions of the same software, or will a native Power Mac program run on a 680X0 Mac?

Richard Hutson

A Software developers may offer many of several options. Both the 680X0 and Power Mac versions of a program may come in one box, with a smart-installer program that determines the appropriate version for each target Mac or lets you choose which version to install. With some software, you have the option of installing a single program file, called a "fat binary", that contains both 680X0 and Power Mac versions. The fat-binary file takes twice as much disk space as a single-CPU version, but it's the best choice for file servers or external hard drives used with different kinds of Macs. A few software developers try to squeeze every penny they can by selling the 680X0 and Power Mac versions separately.

Before installing a program on more than one computer, read the software's licence agreement. It may limit the number of computers on which you can install the program, or flatly prohibit installation on more than one system.

Most of the half-dozen licence agreements I looked over allow installation on two different Macs (such as one person's work and home machines), if they aren't used at the same time.

DICTIONARY TRANSFER

Q As a graduate student, I developed a custom MacWrite II spelling dictionary. How can I use it in Microsoft Word 5.1, which has become my most frequently used piece of software?

Daniel Dilks

A Start by opening the MacWrite dictionary file with Word. To do this, choose All Files from the pop-up menu at the bottom of Word's Open dialogue box. Then use Word's Spelling command on the open MacWrite dictionary document. Word will stop at every entry it doesn't know in that document. By clicking the appropriate button in the Spelling dialogue box, you can either ignore a word or add it to a custom Word dictionary, which you choose from the pop-up menu at the bottom of the Spelling dialogue box.

To create a new custom dictionary, click the Options button in the Spelling dialogue box to bring up the Spelling section of Word's Preferences dialogue box, and click the New button in it. Although this procedure sounds tedious, adding more than 400 words took me only five minutes on a PowerBook 140, and two minutes on a Power Mac 6100.

FASTER ROTATED PICTURES

TIP: In my local bureau, I've have noticed that a page containing artwork that was rotated in QuarkXPress can take as long as 90 minutes to print. The same page with art that was rotated in the original application and then placed in QuarkXPress prints in the normal time. To speed up printing of pages that contain art rotated in QuarkXPress, follow these steps: 1. Place the unrotated art in QuarkXPress, rotate as desired and note the degree of rotation.

Record Macro

Name

☐ Function Key

☒ Option + ⌘ + Key

Options

☐ Play Pauses
☐ Document Specific
☒ Has Shortcut
☐ In Shortcuts Palette

Play In

☒ All Environments
☒ Word Processing
☒ Drawing
☒ Painting
☒ Database
☒ Spreadsheet
☒ Communications

ClarisWorks Power Windows

To set up a ClarisWorks macro that brings a window to the front at the press of a key combination, make settings like these in the Record Macro dialogue box. Be sure to use a different number in the Name box of each window's macro, and use that same number for the option-I-key combination.

2. Open the unrotated art in the application in which it was created (such as Adobe Illustrator or Photoshop), rotate to the degree noted in step 1 and save.
3. Switch to QuarkXPress, update the art with the rotated version and set its rotation to zero degrees.

Floyd Opperman

MAGIC FLOPPY ERASER

TIP: You can reuse a floppy without taking the time to erase it or having to drag its contents to the Trash and then empty the Trash. Just open the floppy and drag everything into one folder at the floppy's root level. Copy the name of a folder you want to put on the floppy and paste the name onto the floppy's root-level folder. The Finder instantly replaces the root-level folder and its contents (which are the contents of the floppy) when you drag a like-named folder to the floppy and "OK" the folder replacement.

Tricia Sgrignoli

WINDOW SWITCHING

TIP: Although ClarisWorks does not offer keyboard shortcuts for switching between windows, you can create your own by recording a set of simple macros (one for each window). Follow these steps:

1. Open any ClarisWorks documents, create new documents, or make new views until you've opened the maximum number of windows you usually work with.
2. Start recording a ClarisWorks macro by pressing I-shift-J and filling in the Record Macro dialogue box (as shown in the "ClarisWorks Power Windows" screenshot).
3. Choose the first window listed at the bottom of the View menu.
4. Repeat steps 2 and 3 to create a macro for each window listed in the View menu, changing the number in the name and keyboard shortcut for each macro.

Now you can switch to any ClarisWorks window by pressing three keys at once: I, option and the number of the window you want to activate. You can make each window a mouse-click away by adding your macros to the Short-cuts palette. Customize each macro's button as described in the ClarisWorks manual.

A. Tanaka

IMPOSSIBLE COLUMN CHART

TIP: Here is a seemingly simple task: prepare a Microsoft Excel column chart that graphs two data series, each on a separate vertical axis. You might use such a chart to graph two series whose values were many orders of magnitude different, such as the total U.S. national debt and the per capita debt. If you try to create a combination chart, with both the main chart and the overlay chart formatted as columns, the columns graphed for one data series hide the columns graphed for the other data series.

You can solve this problem by inserting two series of dummy data (zeros) between the two real data series (columns C and D of the worksheet). In Excel 5.0, follow these steps to create the chart:

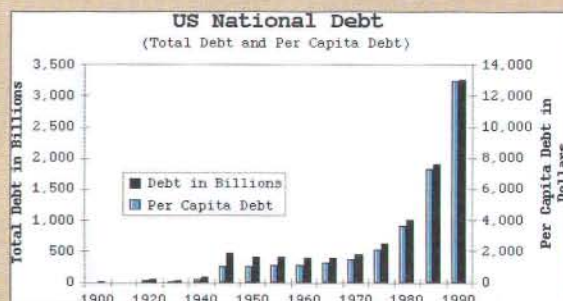
1. Select cells A1:E16 on the worksheet.
2. In the Insert menu, choose As New Sheet from the Chart submenu.
3. Click Next to go to the second step of the Chart Wizard.
4. Double-click the Combination chart type.
5. Double-click chart format number 2.
6. Click Finish (no need to get flashy).
7. Choose 2 Line Group from the Format menu and click on the Chart Type button. Make sure the Apply To option is set to Line Group. Double-click the Column chart type.
8. You can modify the title to suppress the display of the dummy data series. Select the title by clicking on it once. Then click on the name of the first dummy series (not the marker) and click on I-B. Repeat for the second series.

	A	B	C	D	E
		Debt in Billions	x	y	Per Capita Debt
1					
2	1900		1	0	17
3	1910		1	0	12
4	1920		24	0	228
5	1930		16	0	131
6	1940		43	0	325
7	1945		259	0	1,849
8	1950		256	0	1,688
9	1955		273	0	1,651
10	1960		284	0	1,572
11	1965		314	0	1,613
12	1970		370	0	1,814
13	1975		533	0	2,475
14	1980		908	0	3,985
15	1985		1,823	0	7,598
16	1990		3,233	0	13,000

To get the column spacing shown in the sample chart, choose 1 Column Group from the Format menu, click on the Options tab, and set Overlap to 0 and Gap Width to 150. Repeat with the 2 Column Group command. In Excel 4.0, follow these steps to create the chart:

1. Select cells A1:E16.
2. Choose New from the File menu, and select the Chart option (or press F11 on an extended keyboard).
3. Choose Combination from the Gallery menu, and select chart type number 2.
4. Choose Overlay from the Format menu. In the dialogue box that appears, choose Column from the pop-up menu. Make sure the first Data View option is selected, and click on OK to close the dialogue box.

Shane Devinshire



SOUND OPTIONS

Q Can a Quadra AV or Power Mac's sound-input jack accept two audio sources at the same time (stereo signal)? And is the jack designed for a line-level or mike-level signal?

Leo Vincent

A The following Macs have a line-level sound input (2V maximum and 8,000-ohm impedance): all Power Macs; the Quadra 605, 630, 660AV and 840AV; the LC 475, 575 and 630; and the PowerBook 500 series. These Macs require an amplified microphone, such as Apple's PlainTalk mike; or you can connect a line-level audio source such as a VCR, audiocassette deck or audio CD player.

All other Macs have a mike-level sound input (20mV, 600 ohms). To avoid overloading the mike-level sound circuitry with a line-level source – which would probably distort recorded sound but cause no damage to your Mac

– you should use a special cable that attenuates the high-level signal.

The 660AV, 840AV and all Power Macs can digitize a full stereo signal, that is a left-channel signal and a separate right-channel signal. If you want to adjust the mix of the two channels, you'll need extra software, such as Macromedia's SoundEdit16. All other Macs digitize a monophonic signal – even a Quadra 900 or 950

which has left- and right-channel input jacks but mixes the two stereo channels into a single mono signal.

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld System 7.5 Bible*, third edition (IDG Books Worldwide, 1994).

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Fast 68040 processor; more expandable than Quadra 610; Ethernet. See MW 1/95.

Quadra 630 8/230 [cd] (£945) 8/500 [cd] (£)

FPU-equipped LC 630; audiovisual features; drive bay for internal CD-ROM or other storage device. See MW 1/95

Power Mac 6100/60 8/160 (£1,299) 8/250 [cd] (£1,599)

Entry-level Power Macintosh based on PowerPC chip. Runs fastest with native software. See MW 4/94.

Power Mac 7100/66 8/250 (£2,099) 8/250 [cd] (£2,299) 8/500 [cd] AV (£2,899)

Mid-level Power Macintosh based on PowerPC chip. Runs fastest with native software. See MW 4/94.

Power Mac 8100/80 16/500 [cd] (£3,977) 16/1,000 [cd] (£4,477) 16/500 [cd] AV (£4,077)

Top-level Power Macintosh based on PowerPC chip. Runs fastest with native software. See MW 4/94.

PORTABLES

PowerBook 150 4/120 (£999) [m]: with Apple Express modem

Passive-matrix display, 16 greys. Height 2.25in, width 11.25in, depth 9.3in, weight 5.5lb. See MW 12/94

PowerBook 520 4/160 (£1,650)

Passive-matrix display, 16 greys. Height 2.25in, width 11.25in, depth 9.3in, weight 6.8lb. See MW 1/95.

PowerBook 520c 4/160 (£2,100)

Active-matrix display, 16 greys. Height 2.25in, width 11.25in, depth 9.3in, weight 6.8lb. See MW 1/95.

PowerBook 540 4/160 (£2,155) 4/160 [m] (£2,450)

Active-matrix display, 256 colours. Height 2.25in, width 11.25in, depth 9.3in, weight 7.1lb. See MW 1/95.

PowerBook 540c 4/160 (£3,200) 4/160 [m] (£3,600)

Active-matrix display, 256 colours. Height 2.25in, width 11.25in, depth 9.3in, weight 7.1lb. See MW 1/95.

PowerBook Duo 280 4/200 (£1,680) 12/200 [m] (£2,155)

Active-matrix display, 16 greys. Height 1.4in, width 10.9in, depth 8.5in, weight 4.2lb. See MW 1/95.

PowerBook Duo 280c 4/240 (£2,010) 12/240 [m] (£2,480)

Active-matrix display, 32,768 colours. (16-bit). Height 1.5in, width 10.9in, depth 8.5in, weight 4.8lb. See MW 1/95.

PowerBook Duo offers flexibility of a notebook and, linked to Duo Dock, power, expandability, and display options of a desktop computer. Attached to a MiniDock, a Duo can be connected to an external display and other peripherals.

Duo Dock: £560 (with 230MB, FPU, VRAM, £885), Duo MiniDock: £270, floppy adaptor: £80

MACINTOSH DETAILS

Model	CPU	FPU	Max RAM	Base VRAM	Max VRAM	No. of NuBus slots	No. of drive bays ²	Built-in Ethernet
Power Mac 8100	80MHz 601	included	264MB	n/a	n/a	3	3	yes
Power Mac 7100	66MHz 601	included	136MB	n/a	n/a	3	1	yes
Power Mac 6100	60MHz 601	included	72MB	n/a	n/a	1 ³	1	yes
Quadra 950	33MHz 68040	included	256MB	1MB	2MB	5	3	yes
Quadra 840AV	40MHz 68040, 66MHz 3210	included	128MB	1MB	2MB	3	2	yes
Centris 660AV	33MHz 68040, 55MHz 3210	included	68MB	1MB	1MB	1 ³	1	yes
Quadra 650	33MHz 68040	included	132MB	512K	1MB	3	1	yes
Quadra 800	33MHz 68040	included	132MB	512K	1MB	3	3	yes
Quadra 610	25MHz 68040	included ⁴	68MB	512K	1MB	1 ³	1	yes
LC 475	25MHz LC040	none	36MB	512K	1MB	0	0	none
Performa 475	25MHz LC040	none	36MB	512K	1MB	0	0	none
Performa 450	25MHz 68030	optional	36MB	512K	768K	0	0	none
PORTABLES								
PowerBook 150	33MHz 68030	none	40MB	N	N	N	N	none
PowerBook 165	33MHz 68030	none	14MB	N	N	N	N	none
PowerBook 180	33MHz 68030	included	14MB	N	N	N	N	none
PowerBook 180c	33MHz 68030	included	14MB	N	N	N	N	none
PB Duo 230	33MHz 68030	none	24MB	N ⁵	N ⁵	N ⁵	N	none ⁵
PB Duo 250	33MHz 68030	none	24MB	N ⁵	N ⁵	N ⁵	N	none ⁵
PB Duo 270c	33MHz 68030	included	32MB	N ⁵	N ⁵	N ⁵	N	none ⁵

1 Prices exclude keyboard and monitor (check with dealers). 2 For additional drives (excluding internal hard drive and floppy drive).

3 Requires a £70 adaptor; limited to 7in NuBus boards; 6100 AV uses slot for AV card. 4 Not included in base model.

5 Features dependent on dock. All prices exclude VAT, and will vary between dealers.

CPU = central processing unit FPU = floating-point unit, also known as maths coprocessor n/a = not applicable

Mac Update: Products & Services

Mac Update is a directory of hardware and software products for the Mac, organised by key application area and type of hardware.

The directory appears every month (alternating between hardware and software products) and is constantly updated to reflect price changes, upgrades and new products.

v = version number

★★★★★ = Macworld rating (1 to 5)

MW = Macworld Editors' Choice

(x/9x) = Macworld review issue (eg 3/94 is March 1994 issue)

* = PowerPC native version available

Publishers, manufacturers and distributors should send details of product announcements, changes and corrections to:
Mac Update, c/o Gerard Locke, Macworld, 99 Grays Inn Road, London WC1X 8UT, or fax 071 405 5308.

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
ACCESSORIES				
see Macworld May 1994 for PowerBook accessories				
Antiglare Screens	Kensington	Custom-made	Mac Accessory Centre	from £47
Antiradiation Screens	Curtis	Universal and custom-made	Mac Accessory Centre	from £69
Car PowerBook Adaptor	Connect IT	Adaptors for PowerBook batteries	Connect IT	£50
MicroDock Series	Newer Technologies	Mini docking stations for p'book duos	Macline	from £110
Diskette Head Cleaning Kit	3M	As recommended by Apple	3M	£15
DuoDock Series	Apple Computer	Range of powerbook full docking stations	RasterOps	from £560
DuoMate Series	RasterOps	Range of powerbook docking stations	RasterOps	from £445
Etherdock & Powerlink Presenter	Radius	Docking station for p'book Duos	Frontline	£1,695
Ergonomic Mac Tilt Stand	Ergotron	Custom-made for Mac monitors	Mac Accessory Centre	£59
Ergonomic Workstations	Ergotron	Various configurations available	Mac Accessory Centre	from £495
Flightstick Pro	CH Products	Joystick, program trigger, 3 fire buttons	Dimensional Service	£100
GSP 3000 UPS	Gresham Power Electronics	Uninterruptible power supply	Gresham Power Electronics	£3,060
Jensen Tools	Jensen Tools	Tools specifically for your Mac	Jensen Tools	£32
Lokboxx	Safemark	High-security safe	Safemark	£495
MicroBak UPS	Galatrek International	Uninterruptible power supply	Galatrek International	from £790
MiniDock	Apple Computer	Midrange docking station for p'book	Apple	from £270
Nedidock	Asante Technologies	Mini docking station for powerbook duos	Ingram	£199
Padware	Inpace	Ergonomic & medically designed access	Inpace	from £8
PCMCIA Expansion Module	Apple Computer	PowerBook adaptor for PCMCIA cards	Apple	£110
PowerBook Wetsuit	Silicon Sports	Wraparound carrying case	Inova	£60
PowerBrick Extender	TeleAdapt	Additional cabling for PowerBook	TeleAdapt	from £13
Powersafe Switch	Ecoman	Energy-saving switch	Ecoman	£59
Rolsafe	Security Windows	Cabinet & shutter system for Mac	Security Windows	POA
SCSI Boy	APS	PowerBook SCSI connector	Mygate	£25
Screenies	Solutions	Accessories for your monitor	Solutions	£10
STOP	Oxygen	Computer-marking and tracking system	Oxygen	£POA
The Universal Notepad 4	Targus	Universal laptop case	Ingram Micro	£70
ThinPack	VST Power Systems	Powerbook external battery, with utilities	TeleAdapt	£230
Universal Copy Stand	Kensington	Holds small manuals and the like	Mac Accessory Centre	£24
AUDIO				
Apple Design Powered Speakers	Apple	External stereo speakers for Mac	Apple UK	£93
Apple MIDI Interface	Apple	Connect music keyboards/MIDI hardware	Apple UK	£60
Bose Speakers	Bose	External 30W stereo speakers	Computers Unlimited	£325
Digital Performer 1.3	Mark of the Unicorn	Sound Technology	Sound Technology	£595
MacRecorder Sound System Pro	Macromedia	Sound digitiser, inc SoundEdit Pro	Computers Unlimited	£279
SRS Active Stereo Speakers	Sony	Range of external speakers	MacWarehouse	from £50
YST-M10	Yamaha-Kemble	Multimedia powered speakers	Yamaha	£69
DAT/TAPE DRIVES				
see Macworld April 1994 for backup strategies				
2-16GB DAT	Mirror		Mirror	£849
3100	WangDAT	2GB DAT drive	Ambar	£925
3200	WangDAT	4-8GB DAT drive	Ambar	£1,049
3400DX	WangDAT	8-16GB DAT drive	Ambar	£1,277
CTS-4410	Transitional Technologies	4mm DDS-2 DAT subsystem	Principal	£1,515
DAT 4MM	Transitional Technologies	DAT tape drives from 1.4GB to 2.3GB	Principal	£2,995-£3,995
DAT d2	Electronic d2	800e-2GB DAT tape drive	Apple dealers	£1,065-£1,275
DeskTape	Optima	DAT software	Principal	£399
HammerDAT	FWB	DAT tape drives from 1.3GB to 5GB	Midwich Thame	from £1,659
HammerTape	FWB	Tape drives 525MB	Midwich Thame	£1,249



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Mac Update: Products & Services



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OPTICAL DISKS	PRICE
VERBATIM 5 1/4 600/650MB	47-00
VERBATIM 5 1/4 1.2/1.3GB	56-00
VERBATIM 3 1/2 128MB	17-00
VERBATIM 3 1/2 230MB	26-00

REMOVABLE DISKS	PRICE
SYQUEST SQ400 44MB	38-00
SYQUEST SQ800 88MB	48-00
SYQUEST SQ3270 270MB	55-00
SYQUEST QS5200 200MB	55-00

HELICAL SCAN	PRICE
4MM 60M 1.3GB	6-75
4MM 90M 2.0GB	7-50
8MM 112M 2.5/5.0GB	7-25

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Pressdata

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PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
HP DAT drive	Hewlett Packard	2GB Series 6400 DAT Ext Drive	Principal	£1,999
Irwin 5040/60/80/120	Irwin	Tape drives from 40MB to 120MB	Merisel	£605-£841
La Cie DAT drives	La Cie	DAT drives from 1.3GB to 8GB	Principal	from £1,999
La Cie Tape drives	La Cie	Tape drives from 155MB to 600MB	Principal	from £849
Logical	Logical Engineering	Tape drives from 60MB to 5GB	Prolyte	from £895
Micro/DAT MD-1300/MD-5000	MicroNet	DAT tape drives	Cal-Abco; Ideal Hardware	£2,155-£2,425
Micro/Tape	MicroNet	350MB tape drive	Cal-Abco; Ideal Hardware	£1,155
Micro/Tape MicroPak	MicroNet	155MB tape drive	Cal-Abco; Ideal Hardware	£669
Microtech T150/T2000/T2000i	Microtech	Up to 2.0GB tape drives	Mygate	from £799
MiniPak	Optima		Principal	£2,249
ProDAT	Formac	2/8GB DAT tape drives	Formac	£1,880
ProDAT	Formac	4/16GB DAT tape drives	Formac	£1,945
QT-250es/525es	Tecmar	250MB/525MB external SCSI tape drives	Frontline	£1,560-£2,795
QTMAC40/80	Tecmar	40MB/80MB external tape drives	Frontline	£1,125-£1,435
Strategy	APD	2/5/16GB DAT tape drive	MacEurope	£2,495
Tape Drives	OR Computers		DPL	from £338

CD-ROM

see Macworld July 1993 for double-speed CD drives and Photo CD

CD ISO	Apple Computer	CD-ROM player	Apple	£199
CD 300 ***** MW (value)	Apple Computer	Internal/external CD-ROM player	Apple	from £239
CDR-1850S	Hitachi	CD-ROM player	Hitachi	£625
CDR-6700	Hitachi	Double-speed CD-ROM drive	Hitachi	£580
CD-ROM	PLI	Internal/external drives	Key Exchange	from £440
CD-ROM Drive	Mirror Tech	Double-speed CD-ROM player	Mirror Tech	£499
CD Shuttle	Memory Technology	650MB CD-ROM drive/dual-speed	Memory Technology	£499
CMA 532	Cumana	CD-ROM player	Cumana	£560
CMA 632	Cumana	Double-speed CD-ROM drive	Cumana	£454
DRM604X MW (performer)	Pioneer	Quadraspin six-disc autochanger	Pioneer	£1,280
DRM602X	Pioneer	Double-speed six-disc autochanger	Pioneer	£549
DRM1804X	Pioneer	Quadraspin eighteen-disc autochanger	Pioneer	£1,995
DRM104X	Pioneer	Quadraspin single-disc internal	Pioneer	£499
DRMS004X	Pioneer	Quadraspin five hundred-disc autochanger	Pioneer	£19,500
DR-U104X	Pioneer	Quadraspin, 614KB/sec transfer rate	Pioneer	£599
HammerCD	FWB	Double-speed CD-ROM drive	Midwich Thame	£749
Micro/CD-ROM	MicroNet Tech	Double-speed CD-ROM player	Ideal Hardware	£499
MultiSpin 2Xi	NEC	Dual-spin CD-ROM player (int)	NEC	£199
MultiSpin 3Xe/i	NEC	Triple-speed CD-ROM player (ext or int)	NEC	£479/£379
MultiSpin 3Xp	NEC	Triple-speed CD-ROM player (portable)	NEC	£399
MultiSpin 4XPro	NEC	Quad-speed CD-ROM player (ext)	NEC	£849
Optistore CDR	Data Peripherals	Write-once recordable CD-ROM drive	Data Peripherals	£2,995
PCD Writer 200	Kodak	CD writer	FOS-CD; Midwich Thame	£3,995
Philips LMS	Philips	Read/write CD-ROM	Ambar	approx £4,000
Plextor CD-ROM/XA	Plextor	Double-speed-plus CD-ROM	Tekdata	£299
Plextor CD-ROM/4PLEX	Plextor	Quad-speed CD-ROM	Tekdata	£729
PowerCD	Apple	Portable CD-ROM drive	Apple	£329
Pro-Media	Concept Peripherals	Double-speed CD reader	Concept Peripherals	£449
Pro-Media Plus	Concept Peripherals	Triple-speed CD reader	Concept Peripherals	£649
RCD-202 *****	Pinnacle Micro	CD-ROM player	UK Flex	£3,495
RF4000	Reflection Systems	Double-speed CD-recorder system	Reflection Systems	£3,995

COMMUNICATIONS

see Macworld August 1993 for modems

24/96	Mass Micro	Internal PB faxmodem	MacWarehouse	£199
4-Sight EmailFax Integration	4-Sight	Multi-user fax/telex system	4-Sight	£250
4-Sight Fax	4-Sight	Multi-user fax/telex system	4-Sight	from £1,249
4-SightFax (10 users)	4-Sight	Network fax system	4-Sight	£1,499
4-Sight Fax 4-port card	4-Sight	Serial port card	4-Sight	£499
4-Sight ISDN Manager v 1.9.3 *****	4-Sight	128kbps file transfer and serial tool	4-Sight	£1,999
4-Sight Linocomms	4-Sight	Multiuser ISDN	4-Sight	£5,000
4-Sight SOLO	4-Sight	Portable data/faxmodem	4-Sight	from £249
4-Sight Telex	4-Sight	Ten-user telex system	4-Sight	£2,999
Annex Three	Xylogics	ARAP communications server	Xylogics International	per port £62
Asante LAN adaptors	Asante	MacCon-i series of adaptors	Ingram/Prolyte	from £99
COMstation	PSI	Faxmodems	Computers Unlimited	from £199
Cooperative Adapter	Phototronics	Wireless network connections via ADB	Gomark	£302
Courier V32 bis/fax	US Robotics	V42 modem	Ingram	£599
DaynaLink for ARA	Dayna	Wireless network access server	Computers Unlimited	£2,300
DoveFax Desktop/Plus	Dove Computer	Faxmodem	Mygate	£99-£275
Ethernet-SC	TechWorks	Ethernet adaptors	TechWorks	£309
Ethernet-SC PB	TechWorks	Ethernet adaptors	TechWorks	£329
EtherWave *****	Farallon	(5/94) Ethe'rnet transceiver	Gomark	£114
FaxExpress v2.4	Glenwarne	Faxmodem	Glenwarne	£69
Hustler	Creative Solutions	Serial port card	A M Micro	£299
Interfax IX modems	Express Technology	Range of 28.8kbps and 14.4kbps	Express Technology	from £169
Linnet 32 plus fx	Pace	V42 desktop modem	Pace	£349
LinoComms *****	4-Sight	Multi-user ISDN/modem file delivery	4-Sight; Linotype-Hell	£3,600
MacNet	MacNet	Ethernet adaptors	Principal	from £130

Mac Update: Products & Services

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
MacNet 10BaseT	MacNet	Starter Kits Ethernet adaptors	Principal	from £799
Microlin FX/FX 32 Plus	Pace	V42 modem	Principal; Tekdata	£249/£499
NetModem	Shiva	Shared over AppleTalk	Principal	from £1,199
Optima 144 & FAX144	Hayes	V32bis modem & fax	Frontline; Ingram Micro	£539
Optima 288	Hayes	V.F.C modem & fax	Frontline; Ingram Micro	£599
Optima 96 & FAX96	Hayes	V32 modem & fax	Frontline; Ingram Micro	£499
Optima SmartModem	Hayes	SmartModems	Merisel; Ingram Micro	from £358
PB Express	Apple	Modem for PB160/180/210/230	Apple	£350
PBI PowerModem	PSI	PowerBook faxmodems	Computers Unlimited	from £200
PDM40F	Pision Dacom	Pocket fax and modem	Frontline	from £349
PDM60F	Pision Dacom	V42 modem	Frontline	£499
Planet II	SHLP	NuBus ISDN Card	Principal	£1,295
Pocket ISDN Adaptor	RedNet	38.5Kbps/64,000bauds a/synchronous	RedNet	£649
PowerBook faxmodem	Apple	Internal	Apple	£295
QuadFax	SmartLink	Faxmodem	Comtek	from £349
Quin Fax Plus	Andest Comms	V42 autosynch modem	Andest Comms	£549
RediCard faxmodem	Data Race	Fits into Newton messagePad's PCMCIA slot	PPCP	£449
RoadRunner QuinFax plus	Andest Comms	38.4Kbps modem	Andest Comms	£675
RoadRunner Rocket	Andest Comms	V42 pocket modem	Andest Comms	£399
Sapphire	Dataflex	38.4Kbps modem	Dataflex Design	£599
Sapphire Plus	Dataflex	V42 Pocket modem	Dataflex Design	£599
SmartLink	SmartLink Comms	Faxmodems	Comtek	from £249
Sportster Mac'n'Fax	US Robotics	V42 modem	US Robotics	£399
Sportster 28,800	US Robotics	V.34 modem	US Robotics	£299
StarNet	StarNet	Range of Ethernet connectivity products	Performance Direct	from £49
TeleDaptor	TeleAdapt	Adaptors for foreign phones	TeleAdapt	from £100
TelePort Gold/Silver/Bronze/Mercury	Global Village	V42 modem	Frontline	£349/319/109/399
Tornado 14/42	Tricom	V42 modem	Tricom	£899
Ultralink 32plus	Pace Micro Technology	57.6Kbps modem	Pace	£599
ULTRA Smartmodem	Hayes	V-series, 2400, 9600 & 14400 bps	Merisel; Ingram Micro	from £385
US Robotics	US Robotics	V-series, supports 3 high-speed protocols	Ingram	£499
V32 bis/fax	US Robotics	V42 modem	Ingram Micro	£795
V32 turbo Modems	Andest	Data throughput of 115,200bps	Andest	£249
VidMac	Satelcom	Videoconferencing system	Satelcom	£4,495
Virtual Personal Assistant	Andest	14,400bps fax/data modem, answerphone	Andest	£499/£399
Worldport 14400 fax	US Robotics	V42 modem	Ingram Micro	£499

CONNECTIVITY

see Macworld June 1993 for network tips; July 1994 for round-up of protocol analysers

4511A	Tektronix	Ethernet interface for Tek colour printers	Tektronix	£1,295
AsanteHub 1012	Asante Technologies	12-port, 10BaseT Ethernet hub	Proflye	£549
DaynaLink	Dayna	Apple Remote Access server	Computers Unlimited	£2,230
DaynaPort Card	Dayna	Full range	Computers Unlimited	from £90
DaynaPort/SCSI Link	Dayna	Small external SCSI Ethernet adaptor	Computers Unlimited	£330
DaynaPort/SCSI Link-3/SCSI Link-T	Dayna	Ext SCSI Ethernet adaptor, RJ45	Computers Unlimited	from £400
EA412/414/419	Cabletron Systems	SCSI to Ethernet adaptors	Cabletron Systems	£468/£554/£410
Ether & (Thick/10BaseT)	Compatible Systems	Attaches Mac to Ethernet via SCSI	RedNet	£349
Ether & (Thick/Thin)	Compatible Systems	Attaches Mac to Ethernet via SCSI	RedNet	£349
Ether 10-T Starlet	Farallon	Ethernet mini-hub	Gomark; Ingram Micro	£299
EtherLink/NB	3Com	Ethernet adaptor card for Mac II series	Merisel; Principal	£395
EtherLink/SE	3Com	Ethernet adaptor card for Mac SE	Merisel; Principal	£330
EtherMac Cards	Farallon	For LC, SE, IIsi	Gomark; Ingram Micro	from £225
Ethernet Boards	Asante Technologies	For Classics & Quadras	Proflye	from £325
Ethernet DNI Cards	Cabletron Systems	Network interface cards	Cabletron Systems	from £370
Ethernet LC Card	Apple	Ethernet adaptor for LC	Apple	£112
Ethernet NB Card	Apple	NuBus Ethernet network card	Apple	£227
EtherNODE	National Semiconductor	Ethernet adaptor	Ingram Micro	£90A
EtherPeek v2.0.3 MW	AG Group	(7/94) Ethernet protocol analyser	Principal	£699
Etherport SE	Kinetics	Ethernet adaptor for SE, SE/30	Principal	£485
EtherPrint/3/Plus	Dayna		Computers Unlimited	from £399
Ether • Route II	Compatible Systems	LocalTalk-to-Ethernet router	RedNet	£999
Ether • Route/TCP	Compatible Systems	As above, with TCP/IP and DECnet	RedNet	from £1,299
EtherTalk Interface Card	Apple		Apple	£430
Ether • Write	Compatible Systems	Attaches LocalTalk printers to Ethernet	RedNet	£529
Ether • Write/LPR	Compatible Systems	As above, for Unix and Mac users	RedNet	£749
FastPath S	Shiva	LocalTalk/Ethernet Gateway	Principal	£1,995
FDDI NuBus	MacEurope	60MB per minute file transfer	MacEurope	from £2,495
FibreEthernet	MacEurope	Transceiver converts copper to fibre	MacEurope	from £1,999
FibreConcentrator	MacEurope	Ethernet and FDDI fibre concentrators	MacEurope	from £1,195
FriendlyNet	Asante Technologies	Range of adaptors, AAUI Ethernet ports	Proflye; Ingram Micro	£63
GatorBox	Cayman	Ethernet-to-LocalTalk router	Gomark; Cabletron	£2,195
GatorCard E/II	Cayman		Gomark; Cabletron	£359
GatorLink	Cayman		Gomark; Cabletron	£1,597
GatorMIM CS	Cayman	LocalTalk/Ethernet router	Gomark; Cabletron	£2,150
GatorRoute IR	Cayman	Integrated/expandable four-port router	Gomark; Cabletron; CU	£2,950
GatorStar GX-M	Cayman		Gomark; Cabletron	£2,795
GatorStar IHR	Cayman	24-port, 10BaseT hub and an AUI port	Computers Unlimited	£4,450

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INFO No. 313

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
Hub-24	Dayna Communications	24-port 10BaseT hub	Computers Unlimited	£999
Hurdler	Creative Solutions	NuBus serial port cards	AM Micro	from £235
Hurdler SCSI/Serial box	Creative Solutions	For non-NuBus Macs	AM Micro	£595
InterBridge	Hayes	Expands interconnection of networks	Merisel	£799
International Travel Kit	Impacron	Set of socket adaptors	Impacron	£95
LanRover/E	Shiva Corporation		Principal	£170
LanRover/E entry-level	Shiva Corporation	Entry-level remote network access router	Principal	£1,850
LanRover/L	Shiva Corporation	Dial-in server for PowerBook	Principal	£675
LocalPeek v2.0.3	AG Group	(7/94) LocalTalk protocol analyser	Principal	£375
LocalSwitch	Tribe Computer Works	16-port packet-switching hub	Gomark	£2,495
MacRMA	DCA	IBM 3278/3279 display station emulation	Principal; Ingram Micro	£205
MacRMAtrac	DCA	Token-Ring adaptor card	Principal; Ingram Micro	£822
MacRMA LAN Servers	DCA	Gateway and workstation packages	Principal; Ingram Micro	from £2,399
MacLanview 2.00.02	MacLanview	(7/94) Protocol analyser	Cabletron Systems	£1,425
MacMainFrame TokenRing	Avatar		Gomark	from £849
MacTwin	KMW Systems	Connection for Mac and IBM AS/400	Principal	£925
Micro • Router	Compatible Systems	Hardware router, ISDN compatible	RedNet	approx £1,500
MIM	Cabletron Systems	Module for connecting different networks	Cabletron Systems	from £620
Mini EN/SC	Asante Technologies		Proflye	from £341
MR9T	Cabletron Systems	10BaseT standalone multiport repeater	Cabletron Systems	£560
MultiGate Hubs	Network Resources	12-/24-port intelligent hubs	RedNet	from £1,595
NetAccess	KMW Systems	Network gateway card to access IBM host	Principal	£2,600
NetBlazer	Chernikef	Dial-up router	Gomark	£2,500
NetBridge router	Shiva	Extends AppleTalk networks	Principal	£399
NetMinder Ethernet v3.01	Neon Software	(7/94) Ethernet protocol analyser	Gomark	£500
NetMinder LocalTalk v1.1.1	Neon Software	(7/94) LocalTalk protocol analyser	Gomark	£295
Netway 2000	DCA	S&A Gateway	Persona	£4,018
NuVoLink	NuVotech	SCSI-based Ethernet controller	Principal	£395
OrangePC	Orange Micro	Board enables Mac users to use a PC	Principal	£1,599
PhoneNet Card (Ethernet)	Farallon		Gomark; Principal; Ingram	£320
PhoneNet StarConnector ENS00	Farallon		Gomark; Principal; Ingram	£115
Plus Drive	Applied Engineering	Read/write DOS for Plus, SE, II	A M Micro	£375
Planet ISDN	MacConnect	High-speed communications	MacConnect	£995
Planet ISDN	Planet	High-speed communications	Principal	£995
PowerKeyRemote	Sophisticated Circuits		MacWarehouse	£35
Rand E	Focus Enhancements		Focus Enhancements	from £939
Remote/WakeUp	Farallon		Gomark; Principal; Ingram	£50
RISC • Router 3000E	Compatible Systems	High-performance router	Rednet	£2,599
SCSI Cable Terminator	Apple	To terminate any chain of SCSI devices	Apple	£25
SCSI Extender Cable	Apple	Extends system or peripheral cable	Apple	£35
SCSI HDI-30 System Cable	Apple	Connects PowerBks to SCSI peripherals	Apple	£40
SCSI Net	MacEurope	Networks SCSI disk drives	MacEurope	from £1,000
SCSI System Cable	Apple	Connects Macs (except PBs) to SCSIs	Apple	£49
SCSIVue Terminator	Granite	Active diagnostic terminator	MacEurope	from £49
SCSIVue Diagnostic Cables	Granite	Eliminates SCSI errors	MacEurope	from £29
Super Floppy	PLI	Read/write 31/2 DOS and Mac floppies	Key Exchange	£252
T6015	Cabletron Systems	Token Ring DNI card	Cabletron Systems	£790
TechWorks	TechWorks	Ethernet cards	TechWorks	from £149
TeleBridge router	Shiva	Remote bridge between networks	Principal	£399
TokenTalk NB Interface Card	Apple		Apple	£745
Turbo Floppy	PLI	Read/write 3.5in DOS floppies	Key Exchange	£219
TurboStar	NuVotech		Principal	£1,095
TwinAccess	KMW Systems	NuBus card giving Mac access to IBM	Principal	£925
Xyplex Communications Servers	Xyplex	Range of servers with APD, 8-40 ports	Xyplex	from £1,300

DIGITAL CAMERAS

see Macworld September 1994 for roundup of digital cameras

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
DCS 200	Kodak	Digital camera	Midwich Thame	from £5,995
DCS 420	Kodak	Digital camera	Midwich Thame	from £8,199
FotoMan Plus	Logitech	Digital camera	Logitech	£665
Hasselblad/Leaf DB4000	Hasselblad	Digital camera	Hasselblad	approx £26,500
Lumina	Leaf Systems	Digital camera	Albion	£5,995
QuickTake 100 GO MW	Apple	(6/94) Digital camera	Apple	£535

DISPLAY – B&W AND GREYSKALE CARDS

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
Clearvue/G5XL	RasterOps	8-bit greyscale card for Mac II	Frontline	£495
Display Card 4 • 8	Apple	Greyscale card	Apple	£160
DisplayNet	Lapis	Monochrome cards for 19in and A4	Midwich Thame	£499
DisplayServer	Lapis	Monochrome cards	Midwich Thame	from £249
L-View adaptor	Sigma Designs	Greyscale card	Aptec	£350
Monochrome Card	SuperMac	NuBus card for large B&W monitors	Principal	£399
PageView adaptor	Sigma Designs	Greyscale adaptor	Aptec	£380
Prograph GS card	Formac	19in greyscale card	Formac	£1,275
Prograph Mono card	Formac	19in B&W card	Formac	£875
QuickView Z21 greyscale card	E-Machines		Heyden; Frontline; DirekTek	£1,150
QuickView Z21 Mono card	E-Machines		Heyden; Frontline; DirekTek	£395
SilverView Mono Card	Sigma Designs		Aptec	from £500
SilverView Pro	Sigma Designs	Mono/card systems	Aptec	£299

Mac Update: Products & Services

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
DISPLAY — B&W AND GREYSCALE SYSTEMS				
15in Analog Portrait System	Mirror	Greyscale	Mirror	£349
15/19in Portrait & Mono Card	Mirror	Greyscale	Mirror	£449/£649
Lapis A3 Mono	Lapis	19in B&W	Midwich Thame	£899
Mobius One-Page/Two-Page	Mobius	A4 portrait/19in B&W	Principal	£595/£695
PageView GS	Sigma	15in greyscale	Aptec	£499
PowerPortrait	Sigma	15in mono, for compact Macs and PBs	Aptec	£695
SilverMac 8/21in	Hitachi	B&W	Hitachi	£2,250
SilverView Pro	Sigma	21in mono/greyscale	Aptec	£899
Strategy GM	MacEurope	21in greyscale	MacEurope	£999
DISPLAY — COLOUR CARDS				
see Macworld April 1994 for accelerated 24-bit cards				
245	RasterOps	24-bit multisync video card	Frontline	£690
24MX, MXQ	RasterOps	24-bit multifunction boards	Frontline	from £695
24SX	RasterOps	24-bit accelerated for 13in	Frontline	£545
24XLJ	RasterOps	24-bit accelerated video card	Frontline	£1,995
264/SE 30	RasterOps	24-bit for SE 30	Frontline	£595
8•24	Apple	24-bit	Apple	£240
8XL	RasterOps	8-bit video card	Frontline	£545
8XLJ	RasterOps	8-bit accelerated video card	Frontline	£995
BookView Imperial	Simms Int'l	8-bit internal colour card for PowerBook	Simms Int'l	£895
Color 24	Lapis	24-bit	Midwich Thame	£479
Color 24X	Lapis	24-bit	Midwich Thame	£579
Color 24XL	Lapis	24-bit	Midwich Thame	£2,449
ColorLink DC/T	E-Machines	8-bit accelerated with Ethernet	Heyden; Frontline; DirekTek	£575
ColorLink SX/T	E-Machines	24-bit accelerated, with Ethernet	Heyden; Frontline; DirekTek	£625
Chroma	miro graphics	24-bit NuBus card	Aptec	£1,395
DigitalFilm	SuperMac	24-bit multifunction board	Principal	£3,495
Display Card 8•24	Apple	8/24-bit colour card	Apple	£415
Display Card 8•24 GC	Apple	Accelerated colour card	Apple	£895
Dome Md/Max	Data Cell	Data display controller card	Data Cell	£4,700/£5,400
DoubleColor LC	E-Machines	8-bit, supports Mac LC and LCII	Heyden; Frontline	£425
DoubleColor LX	E-Machines	8-bit accelerated card for 12-21in displays	Heyden; Frontline	£675
DoubleColor SX	E-Machines	8-bit accelerated card for 12-16in displays	Heyden; Frontline	£375
Futura II LX	E-Machines	24-bit	Heyden; Frontline; DirekTek	£795
Futura II SX	E-Machines	8-bit accelerated; upgradable	Heyden; Frontline; DirekTek	£425
Futura MX/SX	E-Machines	24-bit accelerated	Heyden; Frontline; DirekTek	from £595
Horizon 24	RasterOps	24-bit accelerated	Frontline	from £3,495
Futura II LX/SX	E-Machines	24-bit accelerated	Principal; DirekTek	from £425
Imagician	MacEurope	Real-time image manipulation	MacEurope	from £2,595
LeMansGT	Radius	24-bit	CU	£2,399
L-TV 6666	Lapis	Lets LC hook up to TV	CU; Midwich Thame	from £449
L-TV Pro LC	Lapis	16-bit colour PAL video interface card	CU; Midwich Thame	from £449
L-TV Pro NuBus	Lapis	16-bit colour PAL video interface card	CU; Midwich Thame	from £549
MediaTime	RasterOps	24-bit multifunction board	Frontline	£2,149
Paintboard 8Li	RasterOps	8-bit colour	Frontline	£395
Paintboard 24	RasterOps	24-bit for 12-21in displays	Frontline	£1,395
Paintboard LI	RasterOps	24-bit for 12-20in displays	Frontline	£845
Paintboard Lightning	RasterOps	24-bit accelerated display adaptor	Frontline	£945
Paintboard Professional	RasterOps	24-bit accelerated display adaptor	Frontline	£2,095
Paintboard Turbo	RasterOps	24-bit accelerated display adaptor	Frontline	£1,345
Paintboard Turbo XL	RasterOps	24-bit accelerated display adaptor	Frontline	£1,695
Pivot ERGO	Radius		Computers Unlimited	£629
PowerBases	Lapis	8-bit display adaptors for PowerBook	Midwich Thame	£549
PrecisionColor/24X	Radius	24-bit card	CU; DirekTek	£1,799
PrecisionColor/24XX	Radius	24-bit accelerated colour card	CU; DirekTek	£999
PrecisionColor/24Xp	Radius	24-bit, QuickDraw acceleration	CU; DirekTek	£599
PrecisionColor Pro 24x	Radius	6.5in, 24-bit card	CU; DirekTek	£1,799
PrecisionColor Pro 24xp	Radius	6.5in, 24-bit card	CU; DirekTek	£599
Prisma GX	miro graphics	8/16-bit NuBus card	Aptec	£795
Prisma GX	miro graphics	16/24-bit NuBus card	Aptec	£995
Prisma II	miro graphics	8-bit NuBus card	Aptec	£695
Procolour	RasterOps	32-bit for 12-21in displays	Frontline	£2,795
Pro ColorServer	Lapis Technologies	8-bit colour cards	Midwich Thame	from £349
ProColourServer II 24	Lapis Technologies	24-bit	Midwich Thame	£479
ProColourServer 24x	Lapis Technologies	16-bit	Midwich Thame	£599
Pro Nitron 80.19 card	Formac	8-bit card for 19in	Formac	£645
Pro Nitron 80.21 card	Formac	8-bit card for 21in	Formac	£695
Pro Nitron GA/GA& card	Formac	Graphics accelerator for 19in and 21in	Formac	from £1,795
Rainbow GX24	miro graphics	24-bit card	Aptec	£2,295
ScoozyView	Aura Systems	SCSI adaptor for PBs	MacSolutions	£545
Serpico 8/24	MacEurope	Accelerated 8/24-bit colour card	MacEurope	from £395
Spectrum/8 Series III	SuperMac	8-bit colour card for 13in to 19in displays	Principal	£499
Spectrum/24 PDQ Plus	SuperMac	Accelerated 24-bit colour card	Principal	£2,199
Spectrum/24 Series IV	SuperMac	24-bit colour card	Principal	£995
Thunder II	SuperMac	Accelerated 24-bit colour card	Principal	£4,999

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Mac Update: Products & Services



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E'Net Card NuBus Combo	£89.99	£80.00
E'Net Card LC Combo	£89.99	£80.00
10Base-T 8 Port Hub	£225.00	£140.00
10 Base-T 12 Port Hub	£499.00	£399.00
10 Base-T SNMP 12 Port Hub	£949.00	£759.00

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INFO No. 319

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
Thunder II GX 1152	SuperMac	Accelerated 24-bit colour card	Principal	£2,495
Thunder II GX 1360	SuperMac	Accelerated 24-bit colour card	Principal	£3,195
Thunder II GX 1600	SuperMac	Accelerated 24-bit colour card	Principal	£3,595
Thunder/8	SuperMac	Accelerated 8-bit colour card, 12in to 21in	Principal	£1,299
Thunder/24	SuperMac	Accelerated 24-bit colour card, 12in to 21in	Principal	£1,195
Tornado	Mirror	24-bit	Third Wave	£699
DISPLAY - COLOUR MONITORS				
see Macworld January 1994 for 14-15in				
14MVX Plus	Hitachi		Hitachi	£395
15in PanaSync Pro 3	Panasonic	15in colour monitor	Panasonic	£599
17in PanaSync Pro 5	Panasonic	17in colour monitor	Panasonic	£995
17in PanaSync Pro 6A	Panasonic		Panasonic	£2,199
19in Sony Trinitron	RasterOps		Frontline	£1,995
20T	RasterOps		Frontline	£3,464
20 Multimode	RasterOps		Frontline	£2,319
2075 DualScan	RasterOps		Frontline	£2,495
2168 21in	RasterOps		Frontline	£3,550
21in Accuvue 5421-5D	MacEurope	21in colour monitor	MacEurope	from £2,100
21in Hitachi Colour	RasterOps		Frontline	£2,295
4CM4270	Philips	14in autoscans high resolution	DirekTek	£300
4CM6088	Philips	17in with Trinitron tube	DirekTek	£1,299
5300/5900	3M	Active-matrix data projection panels	Reflex	£5,245/£6,295
5150/5450	3M	Data projection panels & presentation s/w	Reflex	£4,995/£5,795
AudioVision 14	Apple	14in monitor	Apple	£465
Barco OCM 2846	Barco UK	33in monitor only	Barco UK	£2,350
Brilliance 1520	Philips	15in colour monitor	DirekTek	£430
Brilliance 1720/17A	Philips	17in colour with PrecisionColor 24X	DirekTek	£1,279
Brilliance 20/20A	Philips	20in autoscans monitor	DirekTek	£1,599
Brilliance 21/21A	Philips	21in autoscans monitor	DirekTek	£2,499
C2082DAS	Philips	20in with Trinitron tube	DirekTek	£2,399
ClearVueColor	RasterOps	17/20in 0.26/0.31mm dot pitch	Frontline	£995/£1,995
CM21 Colour	Hitachi	21in monitor for Apple cards	Ideal Hardware	£2,425
CM2187-304	Hitachi	21in monitor, colour adjustment	Ideal Hardware	£2,799
CM2198 Colour	Hitachi	21in monitor; 1600x1200dpi	Ideal Hardware	£1,815
Colour Display	Apple	16 & 21in monitors only	Apple UK	from £264
Colour Display/21	Radius	21in monitor only	Computers Unlimited	£2,599
ColourMac 8 21in Colour	Hitachi		Ideal Hardware	£3,995
ColorMax	Sigma Designs	15-21in, monitor only	Aptec	from £595
ColorPage E16 Colour	E-Machines		Heyden & Son; Frontline	£995
ColorPage T16 Colour MW	E-Machines		Heyden & Son; Frontline	from £1,395
ColorPage T16 11 Colour	E-Machines		Heyden & Son; Frontline	from £1,595
ColorPage T19 Colour	E-Machines		Heyden & Son; Frontline	from £2,495
Diamond Pro 17	Mitsubishi		Art Systems; Reflex	£1,315
Diamond Pro 20	Mitsubishi		Art Systems; Reflex	£1,985
Diamond Pro 29	Mitsubishi	29in	Art Systems; Reflex	£4,495
DiamondScan 20	Mitsubishi		Art Systems; Reflex	£1,895
DiamondScan XC3715	Mitsubishi	37in	Art Systems; Reflex	£6,995
DiamondScan XC3725	Mitsubishi	37in high-resolution	Art Systems; Reflex	£8,395
DiamondScan XC2930	Mitsubishi	29in high-resolution	Art Systems; Reflex	£4,495
EcoMonitor Mac	Nighthawk	Monitor energy saver	Nighthawk	£49
ErgoView	Sigma Designs		Aptec	£1,499
FlexScan T Series	Eizo	15, 17 & 20in colour monitor only	Eizo	from £650
FlexScan F Series	Eizo	15, 17 & 21in colour monitor only	Eizo	from £575
F760i-W/28	Eizo	21in colour, 0.28mm dot pitch	Eizo	£1,900
GraphX Z series model 310	nView	Active-matrix colour data projection panel	RS Visual Products	£10,495
HM48 series	Hitachi	20/21 inch autoscans monitors	Hitachi	from £1,550
IntelliColor Display/20e ERGO	Radius	20in Trinitron-based monitor	Computers Unlimited	£2,499
LitePro Projection Panels	In Focus	LCD projection panels	Reflex	from £6,995
Macintosh Colour Display	Apple	14in	Apple	£225
Macintosh 16in Colour Display	Apple	16in	Apple	£715
Mirror 15in Monitors	Mirror	Portrait, multimedia & FST	Mirror	from £299
Mirror 17in Monitors	Mirror	Trinitron & FST colour monitors	Mirror	£599
Mirror 20in Monitors	Mirror	Trinitron & colour monitors	Mirror	£1,049
Mirror 21in Monitor	Mirror	FST colour monitor	Mirror	£1,699
Mitsubishi XC-33	Mitsubishi	33in monitor only	Art Systems; Reflex	£4,095
MultiScan 15f	Sony	15in, SA Trinitron tube, ergonomic features	Sony	£395
MultiScan 17se	Sony	17in, SA Trinitron tube, ergonomic features	Sony	£1,095
MultiSync 3V	NEC	15in	NEC	£499
MultiSync 4FGeipm	NEC	15in	NEC	£699
MultiSync 4PG	NEC	29in	Maverick	£2,995
MultiSync 5FGeipm	NEC	17in	NEC	£1,049
MultiSync 5FGp	NEC	17in	NEC	£1,299
MultiSync 6FGp	NEC	21in	NEC	£2,199
MXV 14in Colour	Hitachi		Hitachi	from £395
MXV 15in Colour	Hitachi		Ideal Hardware	£699
MXV 17in Colour	Hitachi	0.26mm dot pitch, FST technology	Ideal Hardware	£685
PanelBook 450; 525; 530; 550	In Focus	Portable LCD projection panels	Steljes; Principal; Reflex	from £3,511

MACWORLD FEBRUARY 1995

Mac Update: Products & Services

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
Polarview 3000	Polaroid	LCD projection panels	Thames	from £5,250
PrecisionColor Display/20v	Radius	Two-page colour display	Computers Unlimited	£1,999
PrecisionColor Pivot Ergo	Radius	15in portrait/landscape monitor	Computers Unlimited	£999
PrecisionColor Display/17 ERGO	Radius	Trinitron	CU; DirekTek	£1,299
ProNitron 80.19	Formac	20in Sony Trinitron	Formac	£2,575
ProNitron 80.20	Formac	20in Sony Trinitron	Formac	£2,119
ProNitron 80.21	Formac	21in monitor	Formac	£2,575
ProofScreen 21	miro graphics	24in Trinitron display	Aptec	£2,995
QA-1150	Sharp	Active-matrix LCD projection panel	Principal; Reflex	£5,495
QA-1650	Sharp	Multimedia colour LCD projection panel	Principal; Reflex	£6,995
QA-350	Sharp	(7/94) Passive-matrix LCD panel	Principal; Reflex	£3,295
QA-75A	Sharp	Mono projection panel	Principal; Reflex	£1,395
Ranger	Aydin Controls	15 & 17in, multiple-resolution	Aydin Controls	from £890
Ranger 21in FST	Aydin Controls	21in colour monitor	Aydin Controls	£2,690
Ranger 2051	Aydin Controls	20in autosync colour monitor	Aydin Controls	£1,554
RasterOps 17in	RasterOps	17in, 0.26mm dot pitch	Frontline	£995
SmartTouch 17in	SuperMac	17in	Principal	£2,595
Sony CPD1420S	Sony	14in Trinitron for Mac LC	Aptec; Principal	£399
Sony CPD1430	Sony	14in Trinitron for Mac II, LC, Quadra	Aptec; Principal	£649
Sony CPD1730	Sony	17in Trinitron for Mac II, LC, Quadra	Aptec; Principal	£1,195
Sony GDM20365/2038	Sony	20in Trinitron for Mac II, LC, Quadra, HI	Aptec; Principal	£2,495/£2,695
Sony GDM175E1	Sony	17in Trinitron	Aptec; Principal	£1,500
Strategy 2019 Sony	Sony	20in Trinitron up to 1280x1024	MacEurope	from £1,995
Strategy 2019 CM24	Sony	24-bit, 20in Trinitron	MacEurope	from £2,300
SuperMatch 17, & 20 MultiMode	SuperMac		Principal	from £995
SuperMatch 20in Trinitron	SuperMac		Principal	from £2,695
SuperMatch 21 MW	SuperMac		Principal	£2,895
Sweet 16	RasterOps		Frontline	£1,049
ViewSonic Range of Monitors	ViewSonic	14, 15, 17, 20, 21in colour monitor	Ambar	from £24
VisionMaster 8617	Idek Iiyama	17in colour monitor	Idek Iiyama	£667
VisionMaster Pro21s	Idek Iiyama	21in colour monitor	Idek Iiyama	from £667

DISPLAY - COLOUR SYSTEMS

17 MVX-PC8	Hitachi	With display adaptor	Hitachi	£1,740
17in Trinitron	Mirror Technologies	With display adaptor	Mirror	£999
2087-PC8	Hitachi	With display adaptor	Hitachi	£2,490
2186-PC8	Hitachi	With display adaptor	Hitachi	£2,490
2187-301-PC8	Hitachi	With display adaptor	Hitachi	£3,090
2187-303-PC8	Hitachi	With display adaptor	Hitachi	£3,290
Aspect 17in	Logical Engineering	With display adaptor	Profile	£983
Aspect 820in	Logical Engineering	With display adaptor	Profile	£2,595
Aspect 821in	Logical Engineering	With display adaptor	Profile	£2,695
ColourCard 228	RasterOps	19in 8-bit	Frontline	£4,669
ProNitron 80.19	Formac	20in with adaptor	Formac	£3,095
ProNitron 80.20	Formac	20in with adaptor	Formac	£2,575
ProNitron 80.21	Formac	21in with adaptor	Formac	£3,095
RasterOps	RasterOps	Range of 20ins, with adaptors	Frontline	from £1,590
SyncMaster	Samsung	14in with adaptor	Midwich Thame	£279

DISPLAY - MISCELLANEOUS

PrecisionColor calibrator	Radius		Computers Unlimited	£299
SuperMatch display calibrator	SuperMac		Principal	£149
SuperMatch display calibrator pro	SuperMac		Principal	£795
Truepoint	Microtouch	Touchscreens for Apple monitors	Microtouch	from £1,395

DISPLAY - MONOCHROME MONITORS

15in PageView Greyscale	Sigma Designs		Aptec	£499
15in Power Portrait	Sigma Designs	For PowerBook/Compact Macs	Aptec	£599/£769
19in Mono/Grey MW	RasterOps		Frontline	£990
21in Mono/Grey	RasterOps		Frontline	£895
FullPage	Lapis	A4 monitor only	Midwich Thame	£479
Macintosh Portrait Display	Apple		Apple	£449
MM21	Hitachi	21in monitor for Apple cards	Hitachi	£915
PageView Portrait Mono	Sigma Designs	A4 monitor only	Aptec	£575
Pivot Display/gs	Radius	15in mono display	Computers Unlimited	£599
Pivot Ergo MW	Radius	15in mono display	Computers Unlimited	£629
Prograph Mono	Formac	19in monitor only	Formac	£665
QuickView 221 Mono/Greyscale	E-Machines		Heyden; Frontline	from £1,295
Radius TPD/20GS	Radius	21in monitor only	Computers Unlimited	£999
Radius TPD/21GS	Radius	21in monitor only	Computers Unlimited	£1,199
SilverView/SilverView Portrait	Sigma Designs	21in monitor only	Aptec	£1,295/£1,995
SilverView Pro	Sigma Designs	21in two page display	Aptec	£499

FILM RECORDERS

CI-5000S	Polaroid	2000lpi film recorder	Polaroid	£5,250
ColorFast Digital Film Recorder	GCC Technologies	Up to 4000lpi; 16.7m colours	GCC Technologies	£4,699
Digital Palette	Polaroid	Up to 4000lpi; 16.7m colours	Polaroid	£4,950
FilmPrinter Galleria	Mirus Industries	Up to 5K resolution; 36-bit colour	Pivotal Graphics	£7,495

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INFO No. 325

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
FilmPrinter Turbo II MW(low)	Mirus Industries	Up to 4K resolution; 36-bit colour	Pivotal Graphics	£5,595
Forte	Agfa	Up to 8000dpi resolution; 68.7m colours	Agfa	£19,990
ImageCorder 2000	Focus Graphics Inc.	16.7m Colours	Ambitron	from £9,000
ImageCorder 4700	Focus Graphics Inc.	16.7m Colours	Ambitron	from £8,000
LFR	Lasergraphics	Up to 4000dpi; 16.7m colours	IMC; Reflex	£8,000
LFR-MkIII	Lasergraphics	Up to 8000dpi resolution; 2MB film recorder	IMC; Reflex	£18,750
LFR Mark II MW(high)	Lasergraphics	Up to 4000dpi; 68.7m colours	IMC; Reflex	from £11,995
LFR Personal	Lasergraphics	Up to 4000dpi; 68.7m colours	IMC; Reflex	from £5,495
LFR-X	Lasergraphics	Midrange 35mm slide/film recorder	IMC; Reflex	£8,500
PCR II MW(mid)	Agfa	Up to 4000dpi; 16.7m colours	Agfa	£9,750
Personal LFR	Lasergraphics	Up to 4000dpi; 16.7m colours	IMC	£5,495
ProColor Premier	Agfa	Up to 4000dpi; 16.7m colours	Agfa	£4,950
Sapphire	Management Graphics	Up to 4000dpi; 32-bit colour	Photobition	£12,995
Spectra Star 450	General Parametrics	Up to 4000dpi; 16.7m colours	InterQuad	£11,635

INPUT

ADB - Custom Keyboard	Axon	Custom keyboard service	Axon	from £500
ADB - Graphics Tablet ****	Wacom	A5 digitising tablet	Computers Unlimited	£399
ADB - Mouse	Plusware	Low-cost ADB mouse	Mygate	£29
Apple Adjustable Keyboard	Apple		Apple	£169
Apple Extended Keyboard II	Apple	102-key layout	Apple	£143
Apple Keyboard II	Apple		Apple	£82
Bit Pad Plus	Summagraphics	Digitising tablet	Frontline	£375
DCS 420****	Kodak/Nikon	Digital camera MW 1/95	Kodak	£8,100
Desktop Mouse II ****	Apple	Ergonomic mouse	Apple	£40
DrawingBoard II ***	CalComp	Digitising tablet	DirekTek	from £595
DrawingPad	CalComp	Digitising tablet	DirekTek	from £375
DrawingState A5	CalComp	Digitising tablet	DirekTek	£295
DrawingState A4	CalComp	Digitising tablet	DirekTek	£395
DrawingState A3	CalComp	Digitising tablet	DirekTek	£695
Extended keyboard	Plusware	102-key layout	Mygate	£69
Kidz mouse	Logitech	Rodent-shaped mouse	Logitech	£37
Kurta XGT ****	Kurta	Digitising tablet	Art Systems	from £445
Little Mouse	Mouse Systems	Optical mouse, ADB	Mac Accessory Centre	£75
Little Mouse	Mouse Systems	Optical mouse, A3	Mac Accessory Centre	£99
Mac 101E	Datadesk	Extended keyboard	Merisel	£125
Mac-105	Cutting Edge	Extended keyboard	Gomark	£115
MacRecorder Sound System Pro	Macromedia	Sound digitiser, inc SoundEdit Pro	Computers Unlimited	£279
Maltron keyboard	PCD Maltron	Ergonomic keyboard	PCD Maltron	£375
MC Keypad	Moonstone	For interactive applications	Moonstone	POA
MouseMan	Logitech	Three-button cord/cordless mouse	Logitech	£53/£99
MousePenPro	Appoint	Pen-shaped surrogate mouse	KSI	£99
MouseTapper ***	Contour Designs	Ergonomic mouse top	Camargue Computing	£20
Océ G642x	Océ Graphics	Digitising tablet	Océ Graphics	from £395
PCD - Keyboards	PCD Maltron	Keyboards to reduce RSI	PCD Maltron	£375
Personal Writer PW 10SL	Personal Writer	Digitising tablet	Heyden & Son	from £595
PowerBook Keypad	Kensington		Mac Accessory Centre	£90
PowerGlide 105	Mac Accessory Centre	Extended keyboard	Mac Accessory Centre	£75
Quora Cordless Designer	TDS Cad-Graphics	Pressure pen (painting/drawing tool)	TDS Cad-Graphics	from £580
Sicos Colani mouse ***	Sicos Colani	Ergonomic mouse	Catalyst	from £69
Sign-Maker	Roland Digital Group	Produces signs/stickers	Roland Digital Group	£1,795
SummaSketch III **	Summagraphics	Digitising tablet	Frontline	from £532
SummaSketch fx	Summagraphics	Digitising tablet	Frontline	from £399
TrackMan	Logitech	Trackball	Logitech	£99
Turbo Mouse v4.0	Kensington	Trackball	Mac Accessory Centre	£105
Wacom A0 Graphics Tablet	Wacom	Digitising tablet with cordless stylus	Computers Unlimited	£4,499
Wacom A1 Graphics Tablet	Wacom	Digitising tablet with cordless stylus	Computers Unlimited	£3,599
Wacom A2 Graphics Tablet	Wacom	Digitising tablet with cordless stylus	Computers Unlimited	£1,599
Wacom A3 Graphics Tablet	Wacom	Digitising tablet with cordless stylus	Computers Unlimited	£699
Wacom A4 Graphics Tablet	Wacom	Digitising tablet with cordless stylus	Computers Unlimited	£699
Wacom UD-1212R ***	Wacom	(5/94) A4 Digitising tablet& stylus	Computers Unlimited	£599/£699
XLC	Kurta	Digitising tablet	Art Systems	from £2,800
XGT1212	Kurta	Digitising tablet with cordless stylus	Art Systems	£750

PRINTERS - COLOUR

see Macworld July 1994 for thermal wax and dye-sublimation

IS80 Copier/Printer	Kodak	Colour, PostScript 2, 200MB	IMC	£80,000
3M Rainbow MW	3M	(7/94) Dye-sublimation 300dpi A3	3M; CU	£16,495
68000GA	CalComp	400dpi, poster printer	CalComp	from £39,950
BJC-820	Canon	360dpi, bubblejet	DirekTek	£2,195
Calcomp 5424 A1	Calcomp	A1 bubblejet plotter, 4MB, 360dpi	DirekTek	£2,795
Calcomp 5436 A0	Calcomp	A0 bubblejet plotter, 4MB, 360dpi	DirekTek	£3,595
CHC-445P	Shinko	A4/A3 300dpi, thermal transfer, PS	ColorGraph	from £3,995
CHC-5445P	Shinko	300dpi, dye-sublimation, PostScript	ColorGraph	£9,995
CHC-54461	Shinko	300dpi, dye-sublimation	ColorGraph	£6,400
CHC-5745	Shinko	24-bit proofing printer	MacEurope	£16,995
ColorEdge 1525	Kodak	400dpi, A3, colour, PostScript	IMC	from £28,100
ColorEdge 1525&	Kodak	A3, colour copier, PostScript	IMC	£11,000

Mac Update: Products & Services

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
ColorEdge 1550&	Kodak	A3, colour copier, PostScript	IMC	£22,000
Colorgraph 5446i	Colorgraph	A4, dye-sublimation, 14MB	ColorGraph	£7,950
Colorgraph 5746i	Colorgraph	A3, dye-sublimation, 54MB	ColorGraph	£7,950
ColorMaster Plus PS	CalComp	A4/A3, 300dpi, PostScript	DirekTek	£3,595/£6,995
ColorMaster Plus XF A3/A4	CalComp	A4/A3, 300dpi, thermal wax	DirekTek	£7,995/£4,995
Colormate PS Model 80	NEC	300dpi PostScript thermal wax	NEC	£4,899
ColourPoint 2 PS Professional	Seiko	A4/A3, thermal wax/dye-sub, PS, 16/24MB	Ambitron	£8,860/£13,995
Colorrigh	Prime Option	300dpi, PS dye-sublimation	Tekware	£9,795
ColorTone	GCC	Dye-sublimation	GCC	£6,999
ColourCase PS	Kodak	(7/94) 300dpi, PostScript 2 dye-sub	Midwich Thame	£6,795
ColourPoint A4	DataProducts	Thermal wax, 300dpi, PostScript I	Midwich Thame	£3,495
ColourPoint A3	DataProducts	Thermal wax, 300dpi, PostScript I	Midwich Thame	£5,995
Colour Printer	Apple	A3, 24-bit, 360dpi bubblejet	Apple	£614
Colour StyleWriter	Apple	(9/94) 360dpi, 64 TrueType fonts	Apple	£1,995
DiamondScript G210PS	Mitsubishi	A4 thermal-transfer, colour, PS Level 2	Mitsubishi	£1,995
Digital Photo Imager	Ilford	Print/transparency photo printer	Ilford	£39,000
DisplayMaker Pro	LaserMaster	PostScript 2, 64MB, digital colour printer	LaserMaster	£24,275
EPL 8543	Panasonic	203dpi, thermal-transfer	Panasonic	£4,495
Fiery 200i	EFI	RIP for colour copiers	EFI; CU	£31,950
Fiery Controller 1.25i	EFI	PostScript controller	EFI; CU	£23,950
FieryLite Controller	EFI	PostScript controller	EFI; CU	£14,500
Fiery Print Calibrator 1.0	EFI	For use with Canon CLCs	EFI; CU	£795
FP 6005	Dainippou Screen	601x439mm std dye-sub/thermal transfer	Dainippou Screen	£50,000
G5241-PS	Océ Graphics	A4/A3 thermal wax, 300dpi, PostScript	Océ Graphics	from £4,295
G370-10	Mitsubishi	300dpi, thermal wax	Aptec; Reflex	£1,395
G6710-108	Mitsubishi	300dpi thermal wax	Aptec; Reflex	£4,495
G8062	Océ Graphics	8ppm, 600dpi, laser plotter	Océ Graphics	£4,495
G9000	Océ Graphics	Direct thermal plotter	Océ Graphics	from £8,995
HP DeskJet 1200C/PS	Hewlett-Packard	600dpi, PostScript inkjet	Principal	£1,749
HP DeskJet 650C	Hewlett-Packard	Poster size A1 and A0, 600dpi, 4MB inkjet	Principal	£7,900/£9,250
HP DeskWriter 550C	Hewlett-Packard	Dual cartridge colour/black inkjet	Principal	£440
HP DeskWriter 560C	Hewlett-Packard	ColorSmart, colour/black, 300dpi inkjet	Principal	£509
HP DeskWriter C	Hewlett-Packard	Inkjet; mono/colour	Principal	£309
HP PaintJet XL300	Hewlett-Packard	300dpi inkjet	Principal	£2,249
HP PaintJet XL300-PS	Hewlett-Packard	300dpi inkjet, PostScript 2	Principal	£3,685
HP PaintWriter XL	Hewlett-Packard	A3, inkjet	Principal	£1,795
IBM Color Jetprinter PS 4079	Lexmark	360dpi, PostScript inkjet	Aptec	£2,775
ImagerPlus 12 printer	NewGen	1200dpi, A3 laser printer	Aptec	£6,995
Jolt PSE	Dataproducts	300dpi, PostScript 2, solid ink	Midwich Thame	£3,995
JX-7000	Sharp	300dpi, 8MB, SCSI-2 dye-sub	Intact; Reflex	£6,495
JX-9460	Sharp	600dpi, 8ppm	Intact; Reflex	£1,080
JX-9660	Sharp	600dpi, 8ppm	Intact; Reflex	£1,280
KXP 5400	Panasonic	300dpi, 4ppm, LED printer	Panasonic	£799
NovajET II	ENCAD	Colour inkjet plotter	ColourGen	£7,990
NP-1600 Photographic	Codonics	Network dye-sub printer, 16MB	Floating Point Systems	£10,000
Océ 6430	Océ	300dpi, 50 sheet	Océ	£4,695
Océ 6450	Océ	600dpi, 8ppm	Océ	£4,695
Océ 6460	Océ	300dpi, 8ppm, colour laser	Océ	£11,000
Océ 6625/6665	Océ	400dpi, 20/32ppm	Océ	£13,995/£19,995
Océ 6730	Océ	30ppm, 300dpi	Océ	£29,300
Océ 6845	Océ	45ppm, 300dpi	Océ	£41,000
Phaser II SDX MW	Tektronix	(7/94) Dye sublimation, PostScript 2	Tektronix	£5,695
Phaser III Pxi	Tektronix	300dpi, PostScript 2 inkjet	Tektronix	£5,995
Phaser 200e	Tektronix	300dpi, PostScript 2 thermal wax	Tektronix	£2,495
Phaser 220i	Tektronix	600dpi, PostScript 2 thermal wax	Tektronix	£5,395
Phaser 220e	Tektronix	600dpi, PostScript 2 thermal wax	Tektronix	£3,595
Phaser 300i	Tektronix	300dpi, PostScript 2 thermal wax	Tektronix	£8,995
Phaser 480 MW	Tektronix	(7/94) Full-bleed A3 dye-sub, PostScript 2	Tektronix	£12,995
Pictography 3000	Fuji	(9/94) 400dpi, photo quality A4 prints	Gammadata	£18,800
PosterJet II	Copy Colour	A4-A0 poster printer with PostScript II RIP	DigiColor	approx £24,000
Powerpro	Texas Instruments	600dpi PS laser 12 ppm	Texas Instruments	TBA
Premiere	Questar	Printer controller	Art Systems	£2,699
Primera	Fargo	(7/94) 203dpi, thermal-wax QuickDraw	Colorgraph	£895
Primera& Photorealistic Upgrade Kit	Fargo	As above & ability to switch to dye-sub	Colorgraph	(£1,190& £199) £1,389
Primera Pro	Fargo	600x300dpi, 24-bit dye-sub	Colorgraph; Bannerbridge	£1,649
Professional ColourPoint 2 PSF 14	Seiko	300dpi, dye-sub, PS 2	Ambitron	£13,995
ProofPositive Full-Page MW	SuperMac	See feature in July 1994	SuperMac	£7,995
ProofPositive Two-Page	SuperMac	See feature in July 1994	SuperMac	£14,500
PS 6450	Océ	A3, 600dpi, PostScript 2 laser	Océ Graphics	£3,695
QMS ColorScript 210 (Networking)	QMS	A4, 300dpi, PostScript thermal wax, 8MB	Pragma; MidwichThame	£4,295
QMS ColorScript 230 (Networking)	QMS	A3/A4, PostScript thermal wax, 13MB	Pragma; MidwichThame	£7,695
QMS ColorScript Laser 1000	QMS	(7/94) 8ppm, A4, 300dpi, PostScript laser	Pragma; MidwichThame	£9,995
Rank Xerox 4900	Rank Xerox	Colour laser, 1200x300dpi, 16MB	DirekTek	£8,995
Ripstar	Nighthawk Electronics	PostScript 2 output, 25MHz processor	Nighthawk Electronics	£2,395
Ripstar GT	Nighthawk Electronics	PostScript 2 output, 50MHz processor	Nighthawk Electronics	£2,595
S3600-30U	Mitsubishi	A4, dye-sublimation, 300dpi, full bleed	Aptec; Reflex	from £6,495
S6600	Mitsubishi	A3, dye-sublimation, 300dpi, full bleed	Aptec; Reflex	from £9,995
S3410-30B	Mitsubishi	A4, dye-sublimation, 1500dpi, full bleed	Aptec; Reflex	from £4,995

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PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
S443MV/443HV	Shinko	A4/3 dye-sub, 300dpi, video processor	Colorgraph	from £5,000
S445	Shinko	A4/3 dye-sub, 300dpi, PostScript	Colorgraph	£11,450
SnapPrint 00000	Microtek	Instant film colour printer	CU; Aptec	£1,295
SoftPIP	APS	PostScript 2 RIP controller	Autologic	£7,000
SpectraStar GLx	Gen Parametrics	600x300dpi, thermal-wax, PostScript	InterQuad	£4,599
SpectraStar GTx	Gen Parametrics	600x300dpi, thermal-wax, PostScript	InterQuad	£3,650
SST-Pro	Questar	Printer controller	Art Systems	£11,999
UP-D7000	Sony	Dye-sublimation, 9MB	MacLine	£6,495
VY-MAC Colour Printer	Hitachi	Dye-sublimation, video printer	Hitachi	£10,950
Wasp-PS	Image Technologies	PostScript 2 hardware RIP	Mitsubishi	POA
XLS8300	Kodak	Dye-sublimation, 300dpi	Gammadata	£7,695

PRINTERS - MONO

see Macworld May 1994 and September 1994 for personal printers; February 1994 for high-speed printers

300P	NewGen	4ppm, 300dpi network printer, 3MB	PrePress Solutions; Aptec	£1,595
400P	NewGen	4ppm, 300dpi network printer, 4MB	PrePress Solutions; Aptec	£1,595
440N/ND	NewGen	15ppm, 400dpi network printer/duplex	PrePress Solutions; Aptec	£4,295/£4,795
660 B	NewGen	A3, 600dpi	PrePress Solutions; Aptec	£3,695
660 B	NewGen	A4, 600dpi	PrePress Solutions; Aptec	£1,795
880 P	NewGen	4ppm, 800dpi network printer, 12MB	PrePress Solutions; Aptec	£1,995
1200B	NewGen	8ppm, 1200x600dpi, 20MB	PrePress Solutions; Aptec	£4,990
4039-10 (basic)	Lexmark	10ppm, 300dpi, PostScript, LocalTalk	Aptec	£1,595
4039-10 RD	Lexmark	10ppm, 300dpi, PostScript, LocalTalk	Aptec	£2,195
4039-12 R	Lexmark	12ppm, 300dpi, PostScript, LocalTalk	Aptec	£2,095
4039-12 L	Lexmark	12ppm, 300dpi, PostScript, LocalTalk	Aptec	£2,775
4039-16 R	Lexmark	16ppm, 300dpi, PostScript, LocalTalk	Aptec	£3,195
7080 EC/RP	Genicom	300dpi, 8ppm PostScript laser	Genicom	£1,275/£1,395
7150-A3/A4	Genicom	300dpi, 15/8ppm PostScript laser	Genicom	from £3,295
7170	Genicom	300dpi, 16ppm PostScript laser	Genicom	£2,750
BLP Eclipse 2	GCC	8ppm, PostScript 2 laser, 2MB	GCC	£824
BLP Eclipse 6	GCC	8ppm, PostScript 2 laser, 6MB	GCC	£1,099
BLP Eclipse 8	GCC	As above & Eclipse Smoothing, 10BaseT/2	GCC	£1,299
Brother HJ-400 000	Brother	(5/94) Ink-jet, 360dpi, cable additional	Brother	£299
CCL600S	CalComp	8ppm, 600dpi, PostScript	DirekTek	£2,995
CCL600XF	CalComp	8ppm, 600dpi, PostScript	DirekTek	£3,395
Classic Pen Plotter	CalComp	A0 pen plotter	DirekTek	£5,495
CoStar LabelWriter II	CoStar	Thermal label printer	Computers Unlimited	from £240
CoStar AddressExpress Printer	CoStar	Inkjet printer for envel, postcards & labels	Computers Unlimited	£700
CrystalPrint Express	Qume	12ppm, 600x300dpi, PostScript	Qume	£1,995
CrystalPrint Publisher II	Qume	Laser, 300dpi, PostScript	Qume	£2,999
DECLaser 1152 00000	Digital	300dpi, 4ppm, PostScript 2	DirekTek	£599
DECLaser 1152 Plus	Digital	300dpi, 4ppm, PS 2, 4MB, AppleTalk	DirekTek	£745
DECLaser Pro 6/60	Digital	600dpi, PostScript 2, Ethernet interfaces	DirekTek	£1,599
DesignMate 3024s	CalComp	A18 pen plotter, 30K	DirekTek	£1,795
DesignMate 3024m	CalComp	A1 8 pen plotter, 1MB	DirekTek	£1,995
DesignMate 3036s	CalComp	A0 8 pen plotter, 30K	DirekTek	£2,295
DesignMate 3036m	CalComp	A0 8 pen plotter, 1MB	DirekTek	£2,495
Diconix 180si	Kodak	192dpi Portable inkjet	Midwich Thame	£299
DPI190	ASI	Envelope printer - 5,500/hour, 300dpi	ASI	£5,500
Elite 600	GCC	10ppm, PS Level 2, 4MB	GCC	£1,800
EPL-5600	Epson	Laser, 600dpi, 6ppm, PostScript	Epson; Aptec; Ingram	£1,199
EPL-7500	Epson	Laser, 300dpi, PostScript	Epson; Aptec; Ingram	£1,999
FS-850	Kyocera	18ppm laser, A3, PostScript	Kyocera	£1,648
FS-1500	Kyocera	10ppm, 300dpi, PostScript laser	Kyocera	£1,848
FS-3500	Kyocera	18ppm laser, A3, PostScript	Kyocera	£3,068
FS-5500	Kyocera	12ppm laser, A3, PostScript	Kyocera	£4,549
HL-4/BPS	Brother	4/8ppm, 300dpi, PostScript laser	Brother	£1,799/£2,295
HL-10H	Brother	600dpi, 10ppm, PostScript	Brother	£1,799
HP DeskWriter 520 MW	Hewlett-Packard	300dpi inkjet, RET	Principal	£262
HP JetDirect	Hewlett-Packard	Network printer-management cards	Principal	£POA
HP LaserJet 4Si MX MW (workgroup)	Hewlett-Packard	17ppm, 600dpi, PostScript	Principal	£4,449
HP LaserJet 4MP	Hewlett-Packard	8ppm, 600dpi, PostScript	Principal	£1,179
HP LaserJet 4M Plus	Hewlett-Packard	12ppm, 600dpi, PostScript	Principal	£1,749
HP LaserJet 4ML 0000	Hewlett-Packard	(5/94) 4ppm, 300dpi, PostScript 2	Principal	£1,019
JetPro V50	Summagraphics	A2, 360dpi plotter	Frontline	£1,395
JX-9600	Sharp	5ppm, 300dpi, PostScript	Intact; Reflex	£995
JX-9660	Sharp	8ppm, 600dpi, PostScript	Intact; Reflex	£1,195
KX-PS400	Panasonic	4ppm, 300dpi, PostScript	Panasonic	£799
LaserMaster 1200XL	LaserMaster	1200dpi, A3 typesetter	LaserMaster	£6,595
LaserMaster 1800A3 Plus	LaserMaster	1800dpi, A3 typesetter	LaserMaster	£8,495
LaserMaster 1800XL	LaserMaster	1800dpi, A3 typesetter	LaserMaster	£6,995
LaserWriter 320 00000	Apple	(5/94) 4ppm, 300dpi, PostScript 2	Apple	£675
LaserWriter Pro 630 00000	Apple	600dpi, PostScript laser	Apple	£1,599
LW Select 360 000000	Apple	(4/94) PostScript 1, 600dpi, laser	Apple	£1,349
LBP-8 IV	Canon	600dpi, laser	Canon	£1,649
LM 1000/4 KX	LaserMaster	1000x1000dpi, PostScript	LaserMaster	£2,695
LM 12000 KX	LaserMaster	A3, 1200x800dpi, PostScript	LaserMaster	£15,895
LP 4039-10R	LaserMaster	A4, 600x300dpi, PostScript	LaserMaster	£1,445

MACWORLD FEBRUARY 1995

INFO No. 333

Mac Update: Products & Services

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
LQ 1070	Epson	24-pin dot-matrix, LocalTalk	Aptec	£595
LQ 1170	Epson	24-pin dot-matrix, LocalTalk, A3	Aptec	£809
LQ 570 Plus	Epson	24-pin dot-matrix	Aptec	£449
LQ 870	Epson	24-pin dot-matrix, LocalTalk, A3	Aptec	£719
L55	Star Micronics	300dpi	Star Micronics	£609
LS-5 EX	Star Micronics	300dpi, upgradable to PostScript	Star Micronics	£699
LS-5 TT	Star Micronics	600dpi, 5ppm	Star Micronics	£999
LZR 30	DataProducts	30ppm, PostScript laser, A3/A4	Midwich Thame	from £14,530
LZR 855	DataProducts	600dpi, 8ppm, PostScript laser	Midwich Thame	£1,149
LZR 960	DataProducts	300dpi, 9ppm PostScript laser	Midwich Thame	£995
LZR 1560	DataProducts	400dpi, 15ppm PostScript laser	Midwich Thame	from £2,795
LZR 1580	DataProducts	800dpi, 15ppm, A3/A4 PostScript laser	Midwich Thame/MacEurope	from £2,450
LZR 2080	DataProducts	800dpi, 20ppm, A3 Postscript laser	Midwich Thame/MacEurope	from £3,825
MacPLP	Avery	138dpi label printer	Avery	£229
microLaser Pro 600 PS65	Texas Instruments	(7/94) 600dpi, 8ppm, 65 fonts	DirekTek	£859
microWriter PS23	Texas Instruments	5ppm, 300dpi laser, 23 fonts	DirekTek	£599
microWriter PS65	Texas Instruments	5ppm, 300dpi laser, 65 fonts	DirekTek	£859
Network 440N/ND	NewGen	15/17ppm, 400dpi, PostScript	PrePress Solutions	£POA
Océ 6122/3	Océ	9ppm, 300x300dpi, PostScript laser	Océ	from £1,315
Océ 6142/3	Océ	16ppm, 300x300dpi, PostScript laser	Océ	from £2,320
Océ 6150/1	Océ	8ppm, 600dpi, PostScript2 laser, 6MB	Océ	from £1,149
Océ 6201/2	Océ	5ppm, 300x300dpi, PostScript laser	Océ	from £629
Océ 6470 PS	Océ	1200x600dpi, PostScript2 laser 16ppm	Océ	£4,100
Océ 6500 PS	Océ	17ppm, 600dpi, PostScript2	Océ	£5,995
Océ 6750 PS	Océ	23ppm, 508dpi, PostScript laser	Océ	£35,000
Oki ML280	Oki Systems	24-pin dot-matrix	DirekTek	£299
Oki ML320	Oki Systems	24-pin dot-matrix	DirekTek	£479
Oki ML321	Oki Systems	24-pin dot-matrix	DirekTek	£579
Oki ML3410	Oki Systems	24-pin dot-matrix	DirekTek	£1,349
Oki ML380	Oki Systems	24-pin dot-matrix	DirekTek	£349
Oki ML395C	Oki Systems	24-pin dot-matrix	DirekTek	£1,149
Oki ML390FB	Oki Systems	24-pin dot-matrix	DirekTek	£899
Oki OL 830	Oki Systems	8ppm, 300dpi, PostScript laser, 2MB	DirekTek	£999
Oki OL 850	Oki Systems	8ppm, 300dpi, PostScript laser, 2MB	DirekTek	£1,499
Oki OL 870	Oki Systems	8ppm, 300dpi, PostScript laser, 4MB	DirekTek	£1,849
P3400PS	Agfa Compugraphic	400dpi, PostScript	Agfa	£4,995
PowerPrint	GDT	Printer driver	Academy	£135
PPI 1200	Chelgraph	1,200x600dpi, A3, PostScript 2	Spectra	£11,231
PPI 1800	Chelgraph	1,800x900dpi, A3, PostScript 2	Spectra	£13,846
PPT 600	Chelgraph	600dpi, A3, PostScript 2	Spectra	£10,000
Premiere Pro 840/880	NewGen	8ppm, 800x400/800dpi, PostScript	PrePress Solutions	from £3,895
ProofMaster	CalComp	400dpi, PostScript	CalComp	£35,250
PS 400P	NewGen	400x400dpi, PostScript	PrePress Solutions	£2,495
PS 600T	NewGen	600x600dpi, PostScript, A3	PrePress Solutions	£11,995
PS 630	NewGen	600x300dpi, PostScript	PrePress Solutions	£3,195
PS 840	NewGen	800x400dpi, PostScript	PrePress Solutions	£4,995
PS 1200T	NewGen	1200x600dpi, PostScript, A3	PrePress Solutions	£14,495
QMS 1060 Print System	QMS	10ppm, 600dpi, PostScript network laser	Pragma; Midwich Thame	£2,395
QMS 420 Print System	QMS	4ppm, 300/600dpi, PostScript laser	Pragma; Midwich Thame	£1,495
QMS 860 Print System(Networking)	QMS	As above with 8ppm, A3/A4	Pragma; Midwich Thame	£3,695
QMS 860 Plus Print Sys (Network)	QMS	As above with 1200x600dpi	Pragma; Midwich Thame	£4,995
QMS 1725 Print System(Network)	QMS	17ppm, 300/600dpi, PostScript laser	Pragma; Midwich Thame	£4,295
QMS 1725 SLS Print Sys (Network)	QMS	As above with 12MB	Pragma; Midwich Thame	£4,995
QMS PS 2025 (Networking)	QMS	20ppm, 300/400dpi, A3/A4, PScript laser	Pragma; Midwich Thame	£13,995
QMS PS 2025 TIS (Networking)	QMS	As above with Turbo Imaging	Pragma; Midwich Thame	£13,995
QMS PS 3225 (Networking)	QMS	32ppm, 300/400dpi, A3/A4, PScript laser	Pragma; Midwich Thame	£19,995
QMS 3225 TIS (Networking)	QMS	As above with Turbo Imaging	Pragma; Midwich Thame	£19,995
Q-Script 2000 controller	Quintar	PostScript controller	Colourgraph	£3,995
RX 7100PS	Fujitsu	300dpi, PostScript	Fujitsu	£1,895
SelectPress 600	GCC	8ppm, 600dpi, Clone PostScript, 8MB	GCC	£3,949
SelectPress 600 Pro	GCC	8ppm, 600dpi, Clone PostScript, 16MB	GCC	£4,999
SelectPress 1200	GCC	8ppm, 1200dpi, 24MB	GCC	£6,699
Silentwriter S102P	NEC	10ppm, 600dpi, PostScript, network option	NEC	£1,299
SketchMate	Roland	A4 plotter	Roland	£380
Smart Label Printer Plus	Seiko	Label printer	Ambitron	£189
Smart Label Printer Pro	Seiko	(5/94) Label printer	Seiko	£269
SP3500	Minolta	10ppm, 600dpi, RISC laser	Minolta	£2,199
StyleWriter II	Apple	2ppm inkjet	Apple	£240
The Feeder	Gradco	1,000-sheet paper feeder	Gomark	£600
The Stacker	Gradco	Output stacker	Gomark	£185
The Witch	Point Systems	Cable/driver for non-Apple printer	Academy Software	£55
T Series	NewGen	12ppm, 1,200x600dpi, PostScript	Aptec; PrePress Solutions	£12,995
Turbo/PS660p	NewGen	600dpi, A3, PostScript	Aptec; Merisel	£1,795
Turbo/PS630En	NewGen	600x300dpi, Ethernet standard	Aptec; Merisel	from £3,795
Turbo/PS1200T	NewGen	1200x600dpi; A3, PostScript	Aptec; Merisel	£14,395
Unity XLT	LaserMaster	8ppm, 1000dpi, PostScript laser	LaserMaster	£6,995
Unity 1200XL-Q/T	LaserMaster	8ppm, 1200dpi, A3 laser	LaserMaster	£8,495
WideWriter 360	GCC	Wide-format360dpi, bubblejet	GCC	£1,599

MACWORLD FEBRUARY 1995

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INFO No. 334

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INFO No. 335

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INFO No. 337

Mac Update: Products & Services

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INFO No. 338

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INFO No. 339

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
Xante 81/60	Xante	A3, 600-1200dpi, RISC PostScript laser	Tekware	£6,295
Xante 81/80	Xante	A3, 600dpi, RISC PostScript laser	Tekware	£3,695
Xante 81/96	Xante	A3, 600-800dpi, RISC PostScript laser	Tekware	£4,395
Xante 81/120	Xante	A3, 600-960dpi, RISC PostScript laser	Tekware	£5,195
Xante AAW6/8	Xante	Upgrade to 600dpi for Apple lasers	Tekware	£995
Xante AAW6/12	Xante	Controller to 600dpi for Apple lasers	Tekware	£1,245
Xante AAW6/8	Xante	Upgrade to 600dpi for Apple lasers	Tekware	£995
Xerox 4505/ps	Rank Xerox	A4, 5ppm, 600dpi, PostScript	Aptec	£995
Xerox 4510/ps	Rank Xerox	A4, 10ppm, 600dpi, PostScript	Aptec	£1,250
Xerox 4520/ps	Rank Xerox	A4, 20ppm, 600dpi, PostScript	Aptec	£2,799
Xerox 4220	Rank Xerox	8MB, 20ppm, 300dpi	Aptec	£8,120

PORTABLE PRINTERS

see Macworld September 1994 for low-cost printers

Citizen Notebook Printer II	Citizen	Portable printer	DirekTek	£349
HP DeskWriter 310	Hewlett-Packard	Portable, colour/B&W, 300dpi inkjet	Principal	£230
MobileWriter PS	Mannesmann Tally	Portable printer	Frontline	£869
Portable StyleWriter	Apple	Portable printer for PowerBook	Apple	£299
WriteMove II	GCC	Thermal fusion, 360dpi, portable	GCC	£399

PROJECTORS

Barcodata 8000	Barco	Large-screen video-projection system	Barco	£39,995
Desktop Projector 2300	Proxima	Capable of projecting 24,389 colours	Reflex	£3,995
Desktop Projector 2700	Proxima	Colour projection with video & audio	Reflex	£6,495
Desktop Projector 2800	Proxima	Multimedia projector/video processor	Reflex	£7,250
Desktop Projector 8300	Proxima	Multimedia projector/video processor	Reflex	£9,995
Polarview Projectors	Polaroid	Range of portable projectors	Polaroid	£3,950
XG-3800E	Sharp	Amp/speakers	Reflex	£8,495

SCANNERS - COLOUR

see Macworld November 1993 for low-cost colour

AmScan 2400RT	Amcad	1200dpi 10-bit colour scanner	Amcad	£3,395
Animas Flatbed	Animas	600dpi, colour	Caro-Line	£699
Arcus II	Agfa	12 bits, 1,200x600dpi, colour, Photoshop	Aptec; Ingram Micro	£3,250
Arcus Plus	Agfa	1,200x600dpi, A4, colour	Aptec; Ingram Micro	£3,745
Artiscan 6000C	Tamarack	A4, 300x600dpi, slide/flatbed, colour	Tekware	£1,095
Artiscan 8000C	Tamarack	A4, 400x800dpi, slide/flatbed, colour	Tekware	£1,495
Artiscan 12000C	Tamarack	A4, 600x1200dpi, slide/flatbed, colour	Tekware	£1,995
AS C105B	Animas	12-bit colour; handheld	Caro-Line	£639
AX-1200 Scantouch	Nikon	Flatbed, 565x1200dpi, A4	Nikon	£1,145
CIS 3515	BarneyScan	35mm slide scanner, 1,000dpi	Chromos	£2,500
Coolscan	Nikon	8-bit colour, 2,700dpi film scanner	Principal	from £1,750
Colorgetter Series	Optronics	Upgradable drum scanners from 8x10" up	Optronics	from £22,400
C3300	Integrex Systems	A4, 300dpi, single-pass	Integrex Systems	£399
Expresso	RasterOps	35mm slide scanner, needs capture board	Ingram Micro	£525
Focus II S800GSE	Agfa	600dpi	Agfa	from £4,435
FocusScan 800C	Focus	400x800dpi, colour	Focus	£735
G6000 scanner	Océ Graphics	300dpi AO scanner	Océ Graphics	£9,995
G6035	Océ	500dpi	Océ	£12,990
G6045	Océ	800dpi	Océ	£16,190
GT-6500	Epson	1200dpi, slide/flatbed, colour	Aptec	£745
GT-8000	Epson	800dpi, slide/flatbed, colour	Aptec	£875
Hasselblad MacSie 35A	Hasselblad	35mm slide scanner, 2200dpi	Hasselblad	from £3,300
IX-4015	Canon	(7/94) 400x800dpi, A4	Canon	£948
JX-100	Sharp	200dpi handheld colour	Principal; Reflex	£495
JX-325	Sharp	300dpi, A4 colour, slide/flatbed	Principal; Reflex	£1,495
JX-450	Sharp	A3 colour scanner	Principal; Reflex	£3,995
JX-450	Sharp	Mirror unit	Principal; Reflex	£465
JX-6005/610	Sharp	600dpi, A3 colour, slide/flatbed	Principal; Reflex	from £7,495
JX-32F12	Sharp	Film scan unit	Principal; Reflex	£1,255
LeafScan 35 MW	Leaf Systems	38mm slide scanner, 4,000dpi	Photobition	£7,000
LeafScan 45	Leaf Systems	41mm slide scanner, 5,080dpi	Photobition	£12,500
LS-3510AF MW	Nikon	35mm slide scanner (8-bit/12-bit)	Nikon	£6,995/£7,995
M3CL/IME	AVR	300dpi, A4, colour; inc Photoshop v2.5	Tekware	£1,025
M3CL/PRO	AVR	As above & Typereader OCR	Tekware	£1,315
M6CL/IME	AVR	600dpi, A4 colour; inc Photoshop v2.5	Tekware	£1,155
M6CL/PRO	AVR	As above, with Typereader OCR	Tekware	£1,445
M8CL/IME	AVR	800dpi, A4 colour; inc Photoshop 2.5	Tekware	£1,295
M8CL/PRO	AVR	As above, with Typereader OCR	Tekware	£1,585
MirrorScan 600/Pro	Mirror	600dpi, 24-bit colour; inc Photoshop	Mirror	£899/£1,199
MirrorScan 800/Pro	Mirror	600dpi, 24-bit colour; inc Photoshop	Mirror	£1,099/£1,399
MirrorScan 1200/Pro	Mirror	600dpi, 24-bit colour; inc Photoshop	Mirror	£1,699/£1,999
MT600C	Tamarack	600dpi, A4 colour, with Photoshop v2.5	Tekware	£1,075
MT600CT	Tamarack	As above, with transparency unit	Tekware	£1,650
MT800C	Tamarack	800dpi, A4 colour, with Photoshop v2.5	Tekware	£1,355
MT800CT	Tamarack	As above, with transparency unit	Tekware	£1,930
MT1200C	Tamarack	1200dpi, A4 colour, with Photoshop v2.5	Tekware	£1,895
MT1200CT	Tamarack	As above, with transparency unit	Tekware	£2,490

Mac Update: Products & Services

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
OneScanner - Colour	Apple	Bundled with Ofoto 2.0 & HyperScan	Apple	£989
Personal Colour Scanner	Howtek	600dpi, colour	Techex	£1,395
Power Look	Umax	1200x600dpi, Photoshop, colour	IMC	£3,795
Primascan Scanner	Primagraphics	A3, flatbed, colour	Primagraphics	from £12,600
QCS 35	Imapro	35mm slide scanner, 4000dpi	Protocol	£10,415
QCS 600	Imapro	A3 slide scanner, 600x600dpi	Protocol	£14,995
QCS 2462	Imapro	2,400dpi slide/flatbed	Protocol	£21,950
RFS 2035	Kodak	2000dpi film scanner	Midwich Thame	£5,750
RFS 2035Plus	Kodak	2000dpi film scanner	Midwich Thame	£6,495
SC6000C	Shinko	600dpi, colour, Photoshop & ColorShop	Colorgraph	£799
SC-7500	Shinko	400dpi, A3, full colour	Colorgraph	£3,950
Scan-X	HSD	61x91cm colour slide scanner/flatbeds	Forester	from £2,095
ScanJet IIcx	Hewlett-Packard	400dpi, flatbed, Photoshop LE, OCR	Principal	£930
ScanMaker IHR	Microtek	1200dpi, 24-bit colour, three-pass	CU; Aptec; Ingram	£1,399
ScanMaker IIxe	Microtek	1200dpi, 24-bit colour, Photoshop, 3-pass	CU; Aptec; Ingram	£1,095
ScanMaker IIsp	Microtek	1200dpi, 24-bit colour, Photoshop LE	CU; Aptec; Ingram	£895
ScanMaker IIspxe	Microtek	1200dpi, 24-bit colour, Photoshop	CU; Aptec; Ingram	£1,195
ScanMaker III	Microtek	2400dpi, 36-bit colour, Photoshop	CU; Aptec; Ingram	£2,999
ScanMaker 35T	Microtek	36-bit film scanner, three-pass, 2000dpi	CU; Aptec; Ingram	£1,295
ScanMaker 45T	Microtek	36-bit film scanner, 35mm to 5x5in	CU; Aptec; Ingram	£5,995
ScanMate 4000	ScanView	1-pass, up to 4000dpi drum scanner	SDL	£23,900
Silverscanner II	La Cie	400x800dpi, colour, slide/flatbed	Third Wave	£1,995
Slide Scanner	Ekttron Applied Imaging	2800dpi, 12-bit slide scanner	Controm	£7,200
SprintScan 35	Polaroid	Upto 2700dpi desktop slide scanner	Polaroid	£2,450
ST135	Santos	35mm slide scanner	Tamarack	£1,995
StudioScan II	Agfa	Flatbed, Photoshop LE, FotoSnap, FotoLook	Agfa	£995
Synergiser	Animas	300dpi, colour	Caro-Line	£1,499
Transparency Adaptor	Mirror	600dpi, 24-bit colour	Mirror	from £499
UC1200SE	Umax Technologies	30-bit, slide/flatbed, 2400dpi	IMC	£2,695
UC1260	Umax Technologies	24-bit, slide/flatbed, 2400dpi	IMC	£1,595
UC630	Umax Technologies	Slide/flatbed, 1200dpi, Photoshop LE	IMC	£875
UC840	Umax Technologies	Slide/flatbed, 400x800dpi	IMC	£1,050
Umax PowerLook	Umax Technologies	2400dpi	IMC	£7,995
Vision 35	Agfa	3175dpi, A3, B & W/colour film scanner	Agfa	£7,990

SCANNERS - MONO

AS B105G	Animas	300dpi greyscale; handheld	Caro-Line	£399
BS-300GS	Brother	300dpi greyscale	Brother	£1,245
Caere OmniScan	Caere	Handheld scanner, 400dpi, 8-bit greyscale	CU	£229
Horizon	Agfa	2400dpi (mono); 1200dpi (colour); A3	Agfa	£14,950
Lightning Scan	Thunderware	400dpi, handheld greyscale	Principal	£399
M3GS/OCR	AVR	300dpi, A4, greyscale; inc Typereader OCR	Tekware	£845
M3GS/PRO	AVR	As above & PhotoshopLE	Tekware	£995
M8GS/OCR	AVR	800dpi, A4, greyscale and TypeReader OCR	Tekware	£1,175
M8GS/PRO	AVR	As above, with Photoshop LE	Tekware	£1,325
OneScanner	Apple	300dpi, Greyscale	Apple	£685
RS322 Plus	Ricoh	300dpi, greyscale	Heyden & Son	from £895
RS632	Ricoh	600dpi, greyscale	Heyden & Son	from £1,390
Scan-X 1500	HSD	1500dpi, greyscale	Forester	£1,595
ScanJet IIp	Hewlett Packard	600 dpi, greyscale	Principal	£690
ScanJet Document Feeder	Hewlett Packard	IIc and IIp auto document feeder	Principal	£470/£270
ScanMaker II	Microtek	1200dpi, 24-bit greyscale, OmniScan	CU; Aptec; Ingram	£595
ScanMaker IIG	Microtek	300x600dpi, 8-bit greyscale, OmniScan	CU; Aptec; Ingram	£495
ScanMan Model 32	Logitech	300dpi, handheld, image-editing software	Frontline; Ingram	£249
ScanMan Model 32	Logitech	300dpi, handheld, CatchWord Pro OCR	Frontline; Ingram	£389
ScanMaster 3	Howtek	400dpi, A3	Techex	£5,995
ScanMaster 3&	Howtek	1200dpi	Techex	£6,995
ScanPartner	Fujitsu	300dpi, 10ppm, 50-page feeder	Fujitsu	£1,550
Tranny Adaptor	Microtek	For MRS 2/25, 2T/25T	CU; Aptec	£695

STORAGE

see Macworld December 1993 for storage strategies; March 1994 for 120MB to 540MB

Apple drives	La Cie	From 160MB to 1GB	Thame Systems	from £233
Athena	Microtech	From 50MB to 101MB	Mygate	from £199 to £799
Blue Disc Range	Ideal Hardware	External hard disk 170MB-4GB	Ideal Hardware	from £355
Collegiate Transportable	MicroNet	From 40MB to 200MB	Cal-Abco; Ideal Hardware	from £420 to £985
Coyote	Microtech	From 4MB to 10MB	Mygate	from £198
Dart	Newer	Nonvolatile RAM (max 224MB)	Tekware	£1,795
d2	Electronique d2	From 200MB	Apple Dealers	from £760
D-range	Qisk	External hard drives	Computer Capability	£398
Europa	Microtech	From 40MB to 500MB	Mygate	from £275 to £999
External Drives	Procom	45MB to 2.7GB	Expert Systems	from £299
External Drives	Mac & More	120MB-540MB	Mac & More	from £320
FlexArray	RAIDtec	Enhanced RAID3/5 4-200GB	MacEurope	from £10,000
Frog I/E	Frog Systems	SCSI drives; from 45MB to 2GB	Frog Systems	from £139 to £2,229
hammer	FWB	From 210MB to 2,800MB	Midwich Thame	from £369 to £4,139
Hardpac	MindFlight	External hard drives	Senate Computing	from £350
Micro/Sync SCSI-2	MicroNet	External hard drives with SCSI-2 card	Ideal Hardware	from £2,006

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MicroNet	MicroNet	External hard drives	Ideal Hardware	from £1,099
Micro/Raven twin disk	MicroNet	From 606MB to 2.6GB	Ideal Hardware	from £4,013
MicroStor range	MicroStor	From 170MB to 4GB	Performance Direct	from £125
MiniPak	Optima	External hard drives	Apple Centre West London	from £599
Mirroring	RAIDtec	Independent hardware disk mirroring	MacEurope	from £750
Nova	Microtech	From 100MB to 1.6GB	Mygate	£570-£3,110
Nova XL	Microtech	From 650MB to 2.7GB	Mygate	£1,820-£5,071
Orray	Pinnacle Micro	Two- or four-drive storage system	UK Flex	£14,999
pocketHammer	FWB	From 530MB to 2,100MB	Midwich Thame	£1,299-£3,039
PocketDrive	La Cie	40-120MB drives for PowerBooks	Principal	£469-£799
PowerUser Pro	MacWarehouse	From 210MB	MacWarehouse	£475
PR-External and Internal	Procom Technology	From 120MB to 1.9GB	Expert Systems	from £545
PR-External	Procom Technology	Two-drive enclosure; up to 1.35GB	Expert Systems	from £4,095
ProDisc External	Formac	From 200MB to 3GB	Formac	from £425
ProDisc Array	Formac	Mass storage system	Formac	£3,295
PR-QD	Procom Technology	Internal fixed drives for Quadra	Expert Systems	from £555
Roadrunner	Microtech	From 80MB to 500MB	Mygate	from £399
SledgeHammer	FWB	From 1060MB-5600MB, SCSI-2 RAID	Midwich Thame	£2,299-£9,099
StorTek	MacEurope	External hard drives 170MB-4GB	MacEurope	from £235
Strategy	MacEurope	1GB and up	MacEurope	from £1,500
Tekware	Tekware	External hard drives from 520MB-4.0GB	Tekware	from £695
Tsunami	La Cie	From 50MB to 1.2GB	Principal	£529-£2,399
ZIP	La Cie	650MB/1.2GB external drives	Principal	£2,249/£2,999

STORAGE – OPTICAL

see Macworld December 1993 for storage strategies

20MB Floptika	Procom Technology		DigitalMedia	£525
Concept 128	Concept	MO 128MB	Universal Trading; Mygate	£849
Concept 650	Concept	MO 650MB	Universal Trading; Mygate	£1,999
Concept 1300	Concept	MO 1.3GB	Universal Trading; Mygate	£2,499
DPL650HM	DPL	650MB	DPL	£2,300
Easyfix	DPL	21MB floptical	DPL	£349
EX	OR Computers	21 MB floptical drive for Mac/PowerBook	DPL	from £289
FJ5830E	Ricoh	MO jukebox; up to 83.5GB	Tekdata	£24,475
Frog drives	Frog	MO 128MB	Frog Systems	£699
Fujitsu DynaMO 128	Fujitsu	MO 128MB	Tekware	£795
Fujitsu M2511A	Fujitsu	MO 128MB	Tekware	£1,195
Genesis 120E	Microtech	120MB; MO drive	Mygate	POA
Genesis 650	Microtech	650MB; MO drive	Mygate	POA
hammerDisk 1300FMF	FWB	Up to 1.3GB	Midwich Thame	£4,199
hammerDisk 600S	FWB	MO 650MB	Midwich Thame	£3,199
hammerDisk 130	FWB	MO 128MB	Midwich Thame	£1,159
Infinity Optical 3.5	PLI	128MB; MO drive	Computers Unlimited	£1,699
Infinity Optical 600	PLI	650MB; MO drive	Computers Unlimited	£3,195
Infinity Max Optical	PLI	1GB; MO drive	Computers Unlimited	£3,645
Iomega Floptical	Iomega	21MB floptical	Ambar	£315
La Cie drives	La Cie	128MB drives	Principal	£1,699/£1,899
LaserSafe Plus	Iomega	Up to 1.3GB	Iomega	£3,499
Logical	Logical Engineering	From 120MB to 1.3GB	Profile	from £1,120
MacinStor MaxOptix T3	MaxOptix	1.3GB	Ambar	£3,070
Magstore drives	Magstore	128MB-1.3GB MO drives	Magstore	£899-£3,900
MEOD 128	Procom Technology	128MB; MO drive	DigitalMedia	£949
MEOD 650	Procom Technology	650MB; MO drive	DigitalMedia	£2,999
MicroNet MO/5B	MicroNet	Up to 882MB; MO drives	Cal-Abco; Ideal Hardware	from £1,599
MultiDisk 150	Iomega	150MB, downwards-compatible	Iomega	£925
Optistore 128	Data Peripherals	MO 128MB	Data Peripherals	£799
Optistore 650/650HM	Data Peripherals	MO/MO, WORM 650MB	Data Peripherals	£1,799/£2,199
Optistore 1000	Data Peripherals	MO 1GB	Data Peripherals	£2,749
Optistore 1300HS	Data Peripherals	MO 1.3GB	Data Peripherals	£2,799
Oscar	Lockside	128MB 3.5in rewriteable drive	Lockside	£856
PMO-650 MW	Pinnacle Micro	650MB MO drive	UK Flex	£1,899
PR-External Removable	Procom Technology	Up to 1.3GB	DigitalMedia	from £495
Profile drives	Profile	170MB-2GB drives	Profile	from £395
ProOpt130/650	Formac	MO 128MB, 650MB	Formac	£1,038/£2,645
ProOpt1300/1300HP	Formac	MO 1.3GB, high speed	Formac	£3,325/£3,955
RF-3010	Reflection Systems	128MB; MO drive	Reflection Systems	£1,250
RF-7010	Reflection Systems	1GB; multifunction drive	Reflection Systems	£2,800
RF-7030	Reflection Systems	1.5GB; multifunction drive	Reflection Systems	£2,895
RJ5210E	Ricoh	MO jukebox; up to 20GB	Tekdata	£12,995
RMO-5350	Sony	128MB; MO drive	Principal	£1,379
RMO-5550	Sony	650MB; MO drive	Principal	£2,249
RMO-5570	Sony	1.3GB; MO drive	Principal	£1,975
SCO-650	DAC	650MB; MO drive	DAC	£2,495
SCO-1000	DAC	1GB; MO drive	DAC	£3,495
Scorpio Model 1991 AV	Micropolis	9.1GB; AV disk drive	Micropolis	£3,500
Sierra	Pinnacle Micro	1.3GB drive	UK Flex	£2,699
Strategy 2128SR	Ricoh	128/600MB MO drive	MacEurope	from £899
Strategy 2625SR	Hewlett Packard	1.2GB; MO drive	MacEurope	from £3,495

Mac Update: Products & Services

PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
Tekdata drives	Ricoh	MO 128MB-1.3GB drives	Tekdata	from £995
Xyratex 3000/5000	Xyratex	230MB 3.5/1.3GB 5.25 drives	Xyratex	£765/£1,995
STORAGE - REMOVABLE				
see Macworld December 1993 for storage strategies				
50MB Removable	MicroTech	Ricoh mechanism	Mygate	£499
Blue Disc	Ideal Hardware	44/88MB SyQuest	Ideal Hardware	from £515
Diskcovery 45R/88R	Optima	44/88MB SyQuest	Principal	from £375
Dual 90 Pro	Iomega		Merisel	£898
EQR-40	OR Computers	44MB SyQuest	DPL	£336
EQR-80	OR Computers	88MB SyQuest	DPL	£390
Frog Removable	Frog Systems	SyQuest drives; 45MB to 88MB	Frog Systems	from £329 to £459
hammerDisk	FWB	44MB to 250MB drives	Midwich Thame	from £499 to £769
Infinity Floptical	PLI	21MB floptical	Key Exchange	£325
Infinity	PLI	44/88MB SyQuest drives	Key Exchange	from £415
MacInsider Multidisk 150	Iomega	150MB downwards-compatible Bernoulli	Iomega	£499
MacTransportable Multidisk 150	Iomega		Iomega	£599
MR-45/90	MicroNet	42/88MB SyQuest drives	Cal-Abco; Ideal Hardware	from £555
MRD	Procom	44/88MB SyQuest drives		from £399
MultiDisk 150	Iomega	150MB Bernoulli	Iomega	£489
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SQ40e/80e	Electronique d2	44MB/88MB SyQuest drives	Apple dealers	from £530
Viper 21	Second Wave	21MB floptical	AM Micro	£695
UPGRADES				
see Macworld June 1993 for all; March 1994 for Quickstart; April 1994 for Photoshop accelerators				
16MB SIMMs	Kingston Technology	16MB 60ns SIMS	Simms International	£830
16MHz FPU	TechWorks	FPU for Classic II and LC	TechWorks	£65
Accelerator	TechWorks	25-44MHz 68030/040	TechWorks	from £408
AEHD Plus Drive	Applied Engineering	Reads 400, 800, 1.44MB floppies	Frontline	from £295
Apex	Second Wave	Maths coprocessors	AM Micro	from £125
Axon Switch	Axon	Serial port expander	Nexus Western	£75
Cache-It Bundle	PSI	SE 30 Extender Card	MCMXCIX	£325
Centris 610 NuBus adaptor	Apple	Lets 610 take 7in NuBus cards	Apple	£85
Classic Memory	LMP	1-3MB for Classic	Mygate	from £41
Classic II Co-Pro	LMP	16-25MHz coprocessor	Mygate	from £63
ClockItUp		Accelerator card for power-sapping apps	Mac Connect	£195
Crunch-It	PSI	LC coprocessor	MCMXCIX	£325
Dimomacache	Logica Research	64KB cache	Performance Direct	£349
Duomate 16sc	RasterOps	PB docking station, includes PowerPath	Frontline; Ingram Micro	£545
Duomate 8	RasterOps	Entry-level PowerBook docking station	Frontline; Ingram Micro	£495
Duo MiniDock	Apple	PowerBook docking connector	Apple	£305
Enterprise '030	Total Systems	33MHz 68030	AM Micro	£849
Enterprise LC/LC II	Total Systems	32MHz 68030 card, maths coprocessor	AM Micro	£995
Equalizer LC	DayStar Digital	16MHz 68030 accelerator	Ingram; Merisel	from £150
EtherDock ***	E-Machines	(6/94) Docking station	Principal	£595
Expanse	Second Wave	4 SE PDS slots for SE	AM Micro	from £1,075
FastCache	DayStar Digital	32-129KB, for IIci, IIsi, Quadra	Ingram; Merisel	from £165
FastCache PowerPro	DayStar Digital	1MB secondary cache for PowerPro 601	Ingram; Merisel	from £410
Fastmath	Applied Engineering	16MHz 68882	Frontline	£145
Focus cards	Focus	25-33MHz 68030/040 accelerator cards	Focus	from £324
FPU for Centris 610 and 650	Performance Direct	33MHz 68040 FPU	Performance Direct	£249
Gemini	Total Systems	20-50MHz 68030 accelerator	AM Micro	from £695
Gemini Ultra	Total Systems	50MHz	AM Micro	£1,195
HomeBase	Second Wave	Two PDS slots for Mac Portable	AM Micro	£895
Image Compressor	Neotech	JPEG-compression card and software	Neotech	£600
Impact 030	Extreme Systems	32MHz 68030	Performance Direct	from £199
Intensifier 030	Total Systems	16MHz 68030	AM Micro	from £229
LC 475/Centris 610 FPU	Motorola	Full version of 25MHz 68040 processor	Mygate	£249
LC Co-Pro	LMP	16MHz Maths coprocessor	Mygate	£49
LC Video RAM	LMP	Image enhancing for LC	Mygate	£35
LXPI 2B	PSI	2MB portable	MCMXCIX	£375
Magellan 040	Total Systems	25/33MHz 68040 accelerator	AM Micro	from £1,299
Mercury 030	Total Systems	16MHz 68030 accelerator	AM Micro	£225
Mercury Classic	Total Systems	68030 accelerator for Classic	AM Micro	£695
Multi-Colour	PSI	LC Video SIMM	MCMXCIX	£125
Neotech Image Compressor	Neotech	Image-compression NuBus board	Neotech	£600
PB PowerMemory	PSI	2-4MB for PowerBooks	MCMXCIX	from £225
Performance Direct FPU	Performance Direct	16-33MHz 68882FPU	Performance Direct	from £41
Performance Direct Memory	Performance Direct	Memory upgrades for all Macs	Performance Direct	from £12
PhotoBooster	Radius	Photoshop accelerator for Quadra/Centris	Computers Unlimited	£999
PhotoBooster for StageTwo Rocket	Radius	Photoshop accelerator for ST Rocket	Computers Unlimited	£799
PhotoBooster for Rocket 33	Radius	Photoshop accelerator for Rocket33 & 25i	Computers Unlimited	£799
PhotoPro ****	RasterOps	JPEG accelerator for Photoshop	Frontline; Ingram Micro	£795
PowerBook Memory	LMP	2-6MB for PowerBooks	Mygate	from £100
PowerCache	DayStar Digital	68030 for SE/30, LC, II/x/cx/ci/si	Merisel; Ingram Micro	from £845
PowerLink DeskNet	E-Machines	Docking connector for PB	Heyden; Frontline; DirekTek	£625

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PRODUCT	PUBLISHER/MAKER	NOTES	DISTRIBUTOR	PRICE
PowerLink Presenter	E-Machines	Docking connector for PB	Heyden; Frontline; DirekTek	£399
Powermath	DayStar Digital	16MHz 68882 FPU	Ingram; Merisel	£113
Pro33	Formac	33MHz CPU accelerator for LCI-LCIII	Formac	from £275
Pro50	Formac	LCIII accelerator	Formac	£425
Performer II	Harris	16MHz 68030 accelerator SE/Classic	Mygate	from £99
Performer Pro Accelerator	Harris	25MHz 68030 accelerator SE/Classic	Mygate	from £199
Quadralink	Applied Engineering	Four serial ports	Frontline	£275
Quick!	PRD	IPEG NuBus compression card	PRD	£350
QuickCache IIci	Total Systems	For IIci	AM Micro	£345
RAID Warrior	68000	Quadra PDS SCSI 2	MacEurope	from £625
RAID Warrior Kit	MacEurope	RAID software/hardware for digital video	MacEurope	from £895
RenderEdge Board	StarTech	For MacrenderMan	AppleCentre Kidderminster	from £4,995
Rocket SCSI-2 Booster	Radius	PDS daughtercard connects SCSI-2 devices	Computers Unlimited	£279
Rocket 33	Radius	040 accelerator for NuBus Macs	Computers Unlimited	£1,499
RocketShare	Radius	Software support for Rocket 33	Computers Unlimited	£399
SCSI Jackhammer	FWB	20mbps SCSI accelerator	Midwich Thame	£799
Silicon Express II	Atto Technology	SCSI accelerator	MacEurope	from £695
Silicon Express 3D	Atto Technology	SCSI2 for 25m SCSI chain	MacEurope	from £875
Silicon Express 4	Atto Technology	7-inch SCSI 2 NuBus FAST/WID	MacEurope	from £1,125
SCSI MicroDock	Newer Technology	(6/94) Docking stations	Computers Unlimited	£149
SCSI Expander	Atto Technology	Gives 49 SCSI addresses	MacEurope	from £875
StageTwo Rocket	Radius	40MHz 68040 multi-processing for NuBus	Computers Unlimited	£1,999
ThunderStorm	SuperMac	IPEG accelerator for Photoshop	Principal; Frontline	£895
Applied Engineering		25-50MHz 68030 accelerator	Frontline	from £239
TransWarp Classic	Applied Engineering	40MHz 68030 accelerator	Frontline	£425
Turbo 040	DayStar Digital	25/33MHz 68040 accelerator	Ingram; Merisel	£1,599
Universal PowerCache	DayStar Digital	32-64k cache	Ingram; Merisel	from £392
VIDIexpress	VIDI	16MB RISC coprocessor	MGA	£2,663
Virtual/030 3.0	Connectix	Virtual memory	Computers Unlimited	£90
Voyager '030	Total Systems	33/50MHz 68030 accelerator	AM Micro	£799

VIDEO

see MW June 1994 for video-editing tools and tips; MW January 1995-

245TV/XLTV	RasterOps	24-bit framegrabbers	Frontline	from £695
6450	3M	LCD Projector panel	3M	£4,795
Character Option	Data Translation	Media 100 video production system	Data Translation	£3,195
DataShow AV ASK 16.7	Sayett Technology	LCD Projector panels	Matrix Displays	£4,995
Digital Film	SuperMac	High-end video package	Principal	£3,495
DVA-4000	VideoLogic	8/24-bit video digitiser	VideoLogic	from £1,295
Ellips pluto	Data Cell	Framegrabbers	Data Cell	£1,899
Falcon	Graphics Unlimited	Video capture card, 7in	Neutral	£695
Harlequin	Graphics Unlimited	Video output card	Neutral	£1,295
HyperConverter	Data Cell	Converts Mac display to PAL& S-Video	Data Cell	from £1,300
Image Grabber	Neotech	Video digitiser	Computers Unlimited	from £1,250
Kingfisher	Graphics Unlimited	Video capture card	Neutral	£995
Lite Pro series	InFocus Systems	LCD Projectors see MW 1/95	Steljes	from £4,295
MagnaByte M2xA	Telex Communications	LCD Projector Panel see MW 1/95	Gordon AV	£4,995
MagniView	Dukane	LCD Projector Panel see MW 1/95	GB International	£5,995
Media Suite Pro	Avid	High-end video package	Avid	£8,000
Mediator	VideoLogic	Video digitiser	VideoLogic	£1,875
MoviePak2 Pro Suite	RasterOps	High-end video package	Frontline	£4,695
NuVista	Truevision	Video input/output, 2MB/4MB	Techex	£2,891/£3,098
Rainbow LCD	Chisholm	LCD Projector panel see MW 1/95	CRT Displays	from £4,800
Vision series	Apollo	LCD Projector panel series see MW 1/95	Apollo	from £3,490
Ovation series	Proxima	LCD Projector panels see MW 1/95	Maverick	from £4,150
Panelbook series	InFocus Systems	Range of LCD projector panels see MW 1/95	Steljes	from £4,295
Polarview 3000	Polaroid	LCD projector panels see MW 1/95	Polaroid	£5,250
QA Series	Sharp	LCD Projector panels see MW 1/95	Sharp	from £5,495
QuickView Studio	E-Machines		Heyden & Son; Frontline	£1,695
RC-260	Canon	Still video camera	Canon	£259
RC-560	Canon	Still video camera	Canon	£2,215
RSVP	Graphics Unlimited	Video digitiser and output card	Graphics Unlimited	from £995
Scan Vision	Analogue Way	Wide scan converter, Mac to TV	Greyhawk Europe	from £795
Screen Machine	Fast Electronic	Video digitiser	Fast Electronic	£998
StudioArray	Radius	RAID storage subsystem for VideoVision	Computers Unlimited	£6,999
Venice TV	Neutral	Links Mac to TV/VCR	Neutral	£199
Video Machine Mac	Fast Electronic	Video package, includes software	Fast Electronic	£4,995
VideoSpigot	SuperMac	Video capture boards	Principal; KimTec	from £299
VideoSpigot Pro	SuperMac	Video capture boards	Principal; KimTec	from £995
VideoSpigot & Sound	SuperMac	Video-editing bundle	Principal; KimTec	£695
VideoSpigot & Sound Pro	SuperMac	Video-editing bundle with zoom	Principal; KimTec	£1,095
VideoVision	Radius	Hardware only	Computers Unlimited	£1,999
VideoVision Studio v2.0	Radius	* 24-bit video-editing system	Computers Unlimited	£4,849
VideoVision Studio Pro Pak	Radius	Above & StudioArray, Premier, VideoFusion	Computers Unlimited	£11,498
VideoVision Studio Upgrade	Radius	Video-editing system	Computers Unlimited	£1,999
VP100	Mutoh America	LCD Projector Panel	Mutoh UK	£4,290
XV/XG Series	Sharp	Series of LCD Projectors see MW 1/95	Sharp	from £1,535
Z-series	nView	Series of LCD Projector Panels see MW 1/95	nView International	from £4,250

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INFO No. 364

The last part of Macworld's comprehensive guide to computer- and Mac-related jargon. This month takes in SCSI and SVGA, TIFF and TrueType, Virtual memory and VRAM, and WYSIWYG

Next time you get stuck in a manual, you know where to look...

Sample Digitally recorded audio, usually recorded from an analogue source via audio input hard/software.

Save As Allows a file to be changed and saved (see below) as a name different to that originally assigned to the file.

Save Command used to store a file onto a computer's storage device with a specific name.

Scanner An input device that allows photographs to be brought into documents. A scanner normally takes one of three forms: Hand-held (smallest and cheapest) where you "wipe" the scanner over the picture/ photograph/image; Flatbed (similar to a photocopier) where you place the image over a sliding reader head; and Drum (most expensive of the three) where the image is placed on a "lathe" or barrel that rotates as a reader head passes.

SCC Acronym for Serial Communications Controller.

Screen-saver Software program that shuts down a monitor's display for the protection of the screen.

Scroll Bar Program side strip that allows you to smoothly browse up and down a document.

SCSI Acronym for Small Computer System Interface.

Select All Allows all of the file to react to commands. These commands are usually fixed and are normally found in the Edit menu.

Select Allows selected part of file to react to commands (see above) - this can be done by dragging the cursor across the desired area while holding down the mouse button.

Serial Interface/Port Connector on hardware allowing various compatible peripherals to attach to the computer.

Set Up Allows you to set-up various options (usually related to how a document looks and is printed).

Show Allows you to show certain tools or information in most applications. This is useful if you need to have only specific tools showing on your screen at any time.

SIMM Acronym for Single In-Line Memory Module. Used to expand the machine's capabilities by allowing more memory availability.

Software Applications or programs within which you work to create documents.

Soundcard A card with circuitry allowing expansion of a computer in order to

make sounds through relevant software.

Spreadsheet Maths, accounting and other figure-based calculation-work software.

Superdrive Floppy disk drive installed in most present-day Apple computers that can read Macintosh and PC DOS floppy disks.

SVGA Acronym for Super Video Graphics Adaptor.

SyQuest Cartridge Magnetic platter cartridge for use with external drive - usually high capacity (44Mb plus) and used as a replaceable hard disk with an external SyQuest Drive.

SyQuest Drive The mechanical box that drives a removable cartridge (see above).

System (6/7) Most recent Macintosh computer operating systems.

System Folder Section of hard disk containing all the software required to run the computer's operating system.

TeachText Text file that accompanies software, sometimes containing instructions, sometimes containing latest version information or upgrade information.

Tele-Fax/Data Modem Hardware allowing the computer to send and receive faxes and program/file data down the telephone line.

Thermal Wax Method of printing used on high quality printers.

TIFF Acronym for Tagged Image File Format.

TimeStretch Facility in compatible software/hardware to change the length of a musical note without altering the pitch.

Toner Cartridge Cartridge containing Toner (see below) specifically designed for compatible printers.

Toner Print substance (usually in powder form) for compatible printers.

Tool Bar Overhead bar containing various tools to run commands.

Trackball Pointing device allowing you to roll a ball mounted in a stationary frame. Used as an alternative to a mouse.

Trash Folder (indicated by a rubbish bin icon) for placing files that are no longer wanted. This is for subsequent removal from the disk.

TrueType Fonts Certain outline fonts sent to a printer as a file rather than as a group of dots.

TV Tuner Card Hardware allowing you to watch TV on a compatible computer.

Type I Fonts A collection of standard printer fonts used in the publishing industry.

UNIX Non-Macintosh computer platform.

Upgrade Adding to, changing parts of or completely replacing part of a computer to make a better system.

User Interface The method in which your choices are displayed on-screen – normally a system of continuous windows and “buttons” allowing you user to make decisions using just a mouse rather than typed commands. A GUI (Graphical User Interface) should be clearer and more simple to use with a friendly environment.

Utilities Software allowing you to add more functions to your computer. These can be for almost any subject and most utilities are program-specific, that is designed to run with a particular program. For instance, Quark Xtensions are designed to work with the publishing program Quark Xpress.

VDT Acronym for Video Display Tube.

Vendor Normally the seller but can be the manufacturer.

VGA Acronym for Video Graphics Adaptor.

VIA Acronym for Versatile Interface Adaptor.

Video Graphics Board/Card Circuit board allowing expansion of a computer's monitor choice – normally used when adding a larger monitor to your system.

Video Projector Panel Hardware for presenting images from a compatible computer onto Overhead Projectors. Images stored on your computer are fed by SCSI to the projector panel (mostly LCD) which is placed on an Overhead Projector allowing multiple viewers to see the images. This is mostly used by people who continually have to present the data on their computer, as the projector panels are usually more costly than a high-end computer system.

Virtual Disk Assigned RAM used as “imitation” hard disk storage space. Otherwise known as a RAM Disk. This can be used in the same way as a standard bootable disk.

Virtual Memory The opposite of a Virtual Disk or RAM Disk (see above). Assigned hard disk space used for temporarily accessing/retrieving/calculating. Used as “imitation” RAM (Random Access Memory). Some programs come equipped with built-in virtual memory (such as Adobe Photoshop). Virtual memory is much slower than real RAM memory but can be a way round memory shortage problems, albeit crudely.

Virus Program designed to disable/malfunction certain aspects of a computer – highly dangerous to a user's property/work as it can result in a total loss of work and can also attack programs,

documents on hard disks and sometimes the operating system. Practicing careful virus scanning before using each newly-acquired form of software is the only answer.

VLF (monitor radiation) Acronym for Very Low Frequency. Radiation emitted from computer screens between the 10 and 30kHz range.

VRAM Acronym for Video Random Access Memory.

VSR Acronym for Vertical Scan Rate.

WAN Acronym for Wide Area Network.

Warranty Level of protection for redress against problems. These are often statutory but also include extra protection offered by the vendor (manufacturer).

Windows Computing environment in which applications are run. The windows environment allows compatibility of documents produced on PC and Macintosh. Useful for PC and Macintosh users who need to exchange/edit files.

Word-Count Tool found on most word processing applications that allow you to command a count of words in the selected text.

Word processor Software for creating text-based documents such as letters. Similar to a typewriter in use but with the added facility of often being able to bring in letterheads and graphics plus the ability to cut and paste plus highlight/word-count and so on, as part of a comprehensive set of tools.

WORM Drive Hard disk drives that allow you to add information to an optical disk and access that information but will not allow you to re-write the disk. WORM is an acronym for Write Once, Read Many. These have been superseded by re-writable optical disk drives so ensure that you choose the correct model required as Write Once drives are far less practical.

WWW Acronym for World Wide Web. Internet users' interface allowing you to browse through the Internet.

WYSIWYG Acronym for What You See Is What You Get. The purpose of this is that you can see exactly what will be printed. This lets you make changes/edits prior to printing so saving time/resources.

XTND Translators Program utilities that allow Macintosh versions of software to read/write/open files that were created on PC versions of the same program/software.

Zoom Tool Usually found on illustration/design programs but now becoming common on word processing software. Allows you to zoom in and out on the document to enlarge or magnify specific areas. Ideal for perfectly filling colour, re-touching images or for viewing the entire document's look.

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INFO No. 368

How will Mac clones and new technology affect us?

So, it finally happened. Apple has licensed the first Mac-compatible computers – clones – that won't be built and sold by Apple. At least three companies have signed licences and announced their plans. That's just the beginning – by the end of this year you may not recognize our little corner of the industry as the Mac market.

But first, the clone builders. Only one of the three names might be familiar to you: Radius. Of the others, one – Bandai – has an impressive track record, if not in the area of computing at least in that of consumer goods and electronic entertainment. The third, Power Computing, has no record at all. But this California-based start-up company does have the financial backing of Olivetti.

What isn't clear at this stage is whether the announcements are good news for Apple, or merely indifferent. Given that the Bandai multimedia entertainment system will run most Mac CDs with little modification – and that any Mac will run Pippin CDs straight from the box – we can expect the market for Mac OS to grow in that area. But it's not a huge area; growth may not be that large.

Radius will almost certainly, for the foreseeable future, concentrate on high-end video workstations, and perhaps the high-end publishing market. Again, that may grow the Mac OS market a little – or it might take sales that would otherwise have gone to Apple-manufactured Macs.

The dark horse is Power Computing. Initial indications are that this unknown will sell low-cost Macs via mail order. Given that much of the clamour for Mac clones has come from the kind of users who don't want to pay Apple's prices (regardless of the quality arguments), the kind of users who would buy no-name PC clones on price alone, this could grow the market a lot. Or Power Computing might also take sales that would otherwise have gone to Apple.

The point is not to worry about any reduction in the flow of cash into Apple's coffers, but to

worry about the repercussions that would have on Apple's R&D, and the company's ability to deliver new technologies, and to continue development of the operating system. Of course, Apple believes that those kinds of trade-offs are worthwhile. Why would it license to these companies otherwise?

And cloning is just one aspect of the change that is going to revolutionize the Mac market during 1995. We – and Apple – are going to have to deal with other critical moves, including the switch to the PCI interface and to the next generation of the Mac operating system.



PETER WORLOCK

The move to PCI means that an increasing number of the add-in cards for Macintosh will come from companies that won't be familiar to you. Already, we're down to about one major manufacturer of add-in display boards for Mac (Radius again); what PCI will bring is a flock of companies, big in the PC business, that have a head start in developing PCI-based peripherals.

And while Apple has delayed the introduction of Copland – the next version of the Mac OS expected to appear as System 8 – until 1996, you can expect to hear about a number of features that will be new to you. They include 'hardware abstraction', the process of separating the Mac OS from the Mac hardware; and 'pre-emptive multi-tasking', a more secure way of getting the Mac to do more than one task at a time.

But throughout the year, Macworld will guide you through all of these changes. We'll help you decide whether buying a non-Apple Mac is the right move; we'll explain the issues clone builders face in manufacturing Mac-compatibles that are different but still work with all of the major hardware and software products; we'll explain what PCI means; and what are the implications of moving to the next generation of operating systems.

I've a feeling, Toto, we're not in Kansas anymore. But Macworld will be scouting ahead, and we'll be mapping the yellow brick road.

Macworld

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NEXT MONTH IN Macworld

TEXT CRUNCHING: Considering changing to a different word processor or buying a more powerful package? In next month's issue, Macworld Lab tests the high-end software and gives its authoritative opinion.

The Lab will also be analysing the less complex, less demanding packages for those of you with more basic day-to-day text needs.

THE NEW SCANNERS: Macworld Labs tests colour flatbed scanners that break the 24-bit barrier and capture images at previously unheard of bit-depths.

PLUS: The usual comprehensive spread of reviews and features plus two versions of the mag, with either an HD disk or CD-ROM on the front. Look out for the issue from February 23.

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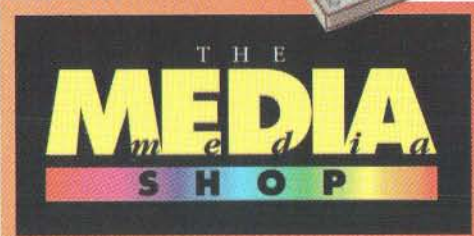


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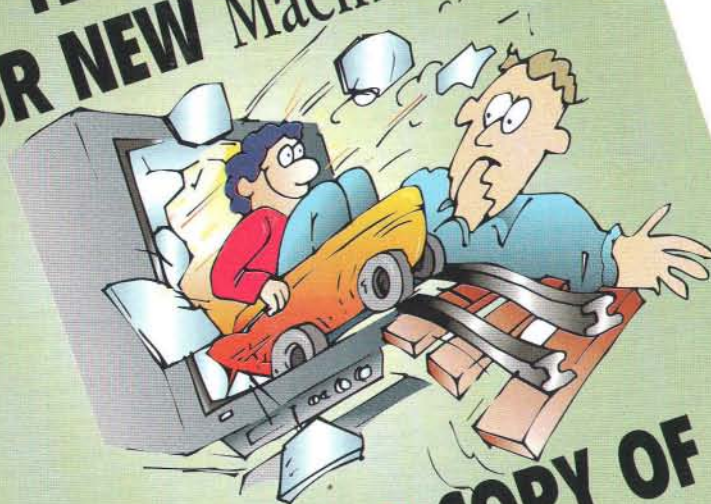
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